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evised Series of rtilizer Index umbers Published

New Materials Included in First Revision Since 1942

— See Tables on Page 8 —

OLLEGE PARK, MD. — A series revised index numbers of prices fertilizer materials for the years 0 to 1954 has been published by University of Maryland Agricul- al Experiment Station, Depart- nt of Agricultural Economics and rketing.

The series is the result of a study nanced in part by a grant from he American Potash Institute, Inc. summary of the study, along with he new indexes, is included in a ublication entitled "Revised Index Numbers of Prices of Fertilizer Ma- erials," by Paul R. Poffenberger, ssociate professor of agricultural conomics at the University of Maryland.

(Continued on page 8)

.A.C. Buys Ohio ertilizer Plant

NEW YORK—The American Agri- ltural Chemical Co. has announced e purchase of the Hamm Co. from e estate of the late Valdo R. Mc- oy. This plant at Washington Court ouse, Ohio, becomes the 29th A.A.C. . fertilizer factory.

Starting immediately, a number of anges and improvements will be ade in the factory and equipment the newly acquired plant. When anufacturing operations are re- med, the plant will produce Agrico nd AA Quality Fertilizers for the ming fall season.

Approval of Farmer Referendum on Marketing Quotas for 1956 Wheat Crop Seen as Industry Opportunity

By JOHN CIPPERLY
Croplife Washington Correspondent

WASHINGTON—With the farmer approval of the marketing quota referendum for the 1956 wheat crop, one thing is clear. Commercial wheat acreage will be limited to 55 million planted acres, the production of which will be subject to marketing quotas.

The general presumption, based on past experience with farmer action, is that only the best wheat land will be cultivated and that every effort will be made by producers to obtain maximum production from planted acreage. This should indicate maximum use of most efficient practices such as use of fertilizer and pesticides.

State-by-State Vote, Page 20

Following the results of the referendum, Ezra Taft Benson, secretary of agriculture, announced satisfaction with the outcome, saying that it indicated farm recognition of the fact that we cannot continue to pile up surpluses under high price support incentive without accepting the penalty of drastic restrictions on production and marketing.

He also announced that the U.S. Department of Agriculture was studying a program to impose loan discounts on wheats of undesirable varieties to discourage their production. If such a plan can be developed — and there are substantial doubts that it can be administered if adopted—it would mean that such declared undesirable varieties would only obtain a loan level equivalent to the feed value of corn. At the same time it would be necessary to grant premiums for the better varieties of high quality milling and baking wheats.

For the plant food industry this poses another marketing aspect which will influence the producer in using farm chemicals. Obviously it seems apparent that for the top quality milling wheats which would command premiums at the Commodity Credit Corp. loan desk—which might conceivably be supported at as high as 90% of parity for the 1956 crop—there is a greater incentive to use and follow the best plant food practices, whereas the farmer continuing to grow only high yielding

(Continued on page 17)

Commission Recommends Wider Participation by States in Farm Conservation Programs

WASHINGTON — The present instrument of federal aid to states for soil conservation services and agricultural conservation payments should be continued as organized and operated. That is the recommendation of the Commission on Intergovernmental Relations whose 15 members were appointed by the president.

In connection with the SCS, the commission qualifies its recommendation for that branch of the U.S. Department of Agriculture with this provision: that where states wish to improve, expand or participate more fully with the program and submit a satisfactory plan to the secretary of agriculture and agree to appropriate sufficient funds, that the entire federal program be put on a grant-in-aid basis with the state government administering the program under supervision of the SCS.

For ACP the commission says that USDA should implement as quickly as possible provisions of basic legislation governing ACP that call for state administration of these payments. Under those provisions federal payments would be made to the state, based on state plans approved by the secretary.

However, this commission also recommends in this connection that as soon as practicable, legislative action be taken to place ACP on a grant in aid basis with the states assuming part of the cost.

While the majority of the commission signed this report there were objections entered by Sen. Hubert Humphrey (D., Minn.), member of the committee. Sen. Humphrey contends that the major objectives of SCS and ACP are essentially national in character and that to distribute administrative tasks by states—particularly in the matter of watersheds —would be a fragmentation of these programs.

Another point of objection entered by Sen. Humphrey is that since many states do not concur in the commission's recommendation, the adoption of the recommendation would estab-

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Filing of Pesticide Petitions Under New Miller Law Slow, Pacific Branch ESA Hears

RIVERSIDE, CAL.—Federal con- ern over the small number of peti- ons filed for agricultural chemical olerances required by the Miller mendment was expressed at the 9th annual meeting of the Pacific ranch, Entomological Society of merica, in Riverside, Cal., June 22.

Addressing 400 entomologists from he nine western states and Hawaii, . T. Coyne, assistant head of SDA's pesticide regulation section, evealed that petitions for only 13 esticide chemicals had been filed ith his section by June 3. The law oes into effect July 22.

Mr. Coyne estimated that more han 60 chemicals registered under he federal Insecticide, Fungicide and odenticide act for raw agricultural commodity uses will require exemptions or tolerances. Under the new amendment, it is the responsibility of his section to submit an opinion to the Food and Drug administration whether the tolerance or exemption proposed by the petitioner reasonably reflects the amount of residue likely to result when the pesticide chemical is used as directed.

"We sincerely urge those folks who have products registered for such uses to get their petitions in as soon as possible," he declared. "We believe that this law will establish greater public confidence in the use of agricultural chemicals and expanded use of agricul-

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New Chemical Firm Plans $13 Million Plant in Arizona

KYRENE, ARIZ. — Thunderbird Chemicals, Inc., was completing arrangements last week for construction of a $13 million fertilizer plant near here. The new operation, expected to be in production in about a year, will manufacture anhydrous ammonia and related nitrogenous fertilizers as well as industrial chemicals.

Fred Shanaman, president of Pennsylvania Salt Manufacturing Co. of Washington, is president of the new firm, capitalized at $50 million. In a telephone interview, he told Croplife that Thunderbird Chemicals has acquired 122½ acres of land for the plant site and construction is expected to begin as soon as plans are completed.

Products of the new company will be marketed in Arizona and adjacent states, he said. Mr. Shanaman, with Rex G. Baker, Jr., secretary-treasurer of Thunderbird Chemicals, was in the process last week of completing arrangements for gas and electricity for the plant.

Plans for the installation are being drawn by Ebasco Services, Inc., New York City.

Heckathorn Sets Up Special Facilities for Spray Project

ALBUQUERQUE—Heckathorn & Co. of Richmond, Cal. has set up special facilities here for a $450,000 spruce budworm control spray project in New Mexico.

The firm, under the supervision of E. S. Heckathorn, president, assisted by E. G. Trimpey, operations manager, is supplying the insecticide to the planes that work from four landing strips.

To facilitate the work, Heckathorn & Co. set up a complete plant in Albuquerque, including a laboratory under the direction of James Brodie, chief chemist. Some of the equipment was transported from Richmond, Cal. with the balance secured locally.

The equipment included storage tanks, pumps, and metering equipment to supply the planes operating from the four distribution centers at Tres Piedras Air Strip, Santa Fe Municipal Airport, Cuba Air Strip and the Dyvad Air Strip.

The three aerial spraying contractors working from these air strips are the Central Aircraft Corp., Yakima, Wash.; Johnson Flying Service, Missoula Mont., and Ace Flying Service, Salem, Ore. They are flying all multi-engine craft: PBY's, Ford-Tri-Motors and D 18's.

Project director, Jim Egan, is cooperating with Dr. Calvin Massey, head of the Albuquerque Forest Insect & Disease Laboratory at the Rocky Mountain Experiment Station, who is chief biologist. Biologists, helpers and radiomen make daily collections and reports to determine the right time for spraying operations.

It is expected that syraying with one pound of DDT in one gallon of fuel oil per acre will reduce the infestation of spruce budworm by 97 to 99%, and still not be harmful to animals or birds. Special attention is being given to bee colonies and fish hatcheries.

The same operation for spruce budworm will be repeated on 168,000 acres in Montana in July. Heckathorn & Co. will transport its equipment and personnel to Missoula, Mont., to prepare and supply the insecticide used.

The planes will fly from Hamilton and Gardiner, Mont., under the direction of the U. S. Department of Agriculture, Forest Service. More than 3,700,000 acres in western forests are infested and will require spraying.

James R. Dutton, USDA, with headquarters in Denver, will direct the grasshopper control program scheduled for this summer over 350,000 acres in New Mexico. Heckathorn & Co. will formulate and supply the insecticide, 2 oz. aldrin to each gallon.

This project will be followed by spraying 41,000 acres in Nevada, 131,000 acres in Utah, and 50,000 acres in Montana for grasshopper control with Heckathorn & Co. formulating the insecticide.

E. S. Heckathorn

David B. Scott, Former Western Sales Head for American Potash, Dies

LOS ANGELES — David Burnett Scott, for 18 years western sales manager for American Potash & Chemical Corp. until his retirement in 1952, died of a heart attack June 20 at his home in Altadena, Cal., a suburb of Los Angeles. Private funeral services were held at Ives and Warren in Pasadena, with interment at Mountain View Mausoleum in Altadena.

Mr. Scott is survived by his widow, Alice M. Scott; a son, David B. Scott, Jr., who lives at Salinas, Cal.; a daughter, Mrs. Eugenia Alice Paul, of Redondo Beach, Cal.; and five grandchildren.

Mr. Scott was named head of American Potash & Chemical Corp.'s western sales office upon its establishment in 1934. Following his retirement in 1952, he acted as consultant on sales matters for the firm.

Born in Pennsylvania in 1887, he graduated from Williams College in 1908. He went on to Columbia School of Mines to receive a master's degree in mining engineering in 1911.

Mr. Scott was a member of the University Club, American Institute of Mining Engineers, Sigma Xi, honorary scientific society, and Tau Beta Pi, a mining engineer honorary society.

Consolidated Chemical Industries Promotes Three Executives

NEW YORK—Consolidated Chemical Industries, Inc., one of the nation's major producers of sulphuric acid, has announced the promotion of three executives in the southern division.

Hubert C. Snowden is the new general superintendent of the division, replacing J. C. Crowder, who moves to San Francisco headquarters as vice president and general manager in charge of west coast and east coast glue operations; O. D. Massey replaces Mr. Snowden as plant manager of the Houston plant; and J. A. D. Todd replaces Mr. Massey as plant manager of the Fort Wayne plant.

Yellow Clover Aphid Hits Southern California

SAN FRANCISCO — The yellow clover aphid has been causing serious damage in alfalfa fields in five counties of southern California, according to Robert Harper, assistant chief of the Bureau of Entomology of the California State Department of Agriculture.

Aphids have been killing young plants in Los Angeles, San Bernardino, San Diego, Riverside and Imperial counties, and have caused yellowing, leaf drop and wilted stalks in older plants.

The aphid was first discovered in California only in February of 1954 on roadside bur clover in San Diego County, and had spread into wide areas of Imperial by that summer.

SOIL BUILDERS—Winners in the nation-wide Soil Builders Award for Editors Contest, sponsored by the National Plant Food Institute in cooperation with the American Agricultural Editors Assn. were Kirk Fox, editor of Successful Farming, and Tom Leadley, editor of The Nebraska Farmer. Shown at the presentation ceremonies at the preliminary convention of the Institute at White Sulphur Springs, W. Va., are, left to right, V. C. Weidner, who represented Mr. Fox; Louis H. Wilson, secretary of the Institute, who made the presentation, and Mr. Leadley. Mr. Fox represented the winning magazine in the category of more than 300,000 circulation and Mr. Leadley represented the winning magazine in the category of less than 300,000 circulation. Total readership of all 44 magazines entered in the contest exceeds 50,000,000.

Rex E. Lidov

Rex E. Lidov Named To Research Post By Brea Chemical

LOS ANGELES—Dr. Rex E. Lidov has been appointed research associate in the research department of Brea Chemicals, Inc., subsidiary of the Union Oil Company of California, it was announced recently by Dr. G. S. Schaffel, Brea manager of research.

Formerly assistant manager of the Shell Development Co.'s Agricultural Chemicals Division in Denver, Dr. Lidov will be responsible for some aspects of new product development from the company's new materials.

He formerly served as research chemist for the Portland (Ore.) Gas and Coke Co., Portland, and the Dearborn Chemical Co., Chicago. Later he became assistant director of research of the Velsicol Corp., Chicago, and director of research for Julius Hyman and Co., Denver.

A graduate of the University of Chicago, Dr. Lidov resides in Fullerton, Cal.

Topeka Seed Firm Names Representative

TOPEKA, KANSAS — William H. Smith has joined the Coe Seed Co. here as a representative specializing in the sale of fertilizers, agricultural chemicals, feeds and seeds. Mr. Smith was graduated from Washburn University, Topeka, and attended Washburn Law School for two years before becoming affiliated with the air traffic control centers in Denver, St. Louis and Kansas City.

Chemical Enterprises Elects Two New Vice Presidents

NEW YORK—Two new vice presidents have been elected by the board of directors of Chemical Enterprises, Inc., it was announced recently by Daniel B. Curll, Jr., president.

Charles H. Lockton was elected vice president and treasurer of the company and Maurice E. Ash was elected vice president in charge of purchasing.

Mr. Lockton formerly was engaged in the import-export industry in Turkey. He served for three years as chairman of the board and president of E. R. Squibb & Sons of Turkey and also was treasurer of Squibb's overseas organization.

Mr. Ash headed the purchasing division of Merck & Co. for the past nine years. He served as chief of the Drugs, Cosmetics and Fine Chemicals Division of the OPS during the Korean emergency period.

Monsanto to Launch Penta Promotion

ST. LOUIS — Monsanto Chemical Co. will launch its latest and most intensive promotion of penta in pressure-treated wood for the farm Aug. 1 with a $6,500 contest aimed at farmers through rural lumber dealers, the company's Organic Chemicals Division has announced.

First prize in the Monsanto Penta Win-A-Building Sweepstakes will be a $3,500 pole-type building constructed of wood pressure treated with penta against termites and decay, to be erected on the winner's site. Thirty four additional prizes of penta pressure-treated lumber, fence posts and Masonite Tempered Presdwood will go to other winners, all to be determined by blindfold drawing of entry cards after the contest closes Sept. 9.

Monsanto is concentrating its promotion of the contest on farmers in Illinois, Indiana, Iowa, Kansas and Nebraska where stands of native timber are limited, and farmers are more conscious of the cost and the need for conservation of wood, according to John L. Hammer, Jr., divisional director of marketing.

Clyde R. Croft Dies

JONESBORO, ARK.—Clyde R. Croft, 66, a former president of the Arkansas Fertilizer Co. and a planter until his retirement in 1944, died at his home at Jonesboro June 19.

ohns Hopkins Conference Hears of Role of Molybdenum n Utilization of Nitrogen

BALTIMORE—A farmer can ex- ect a yield of three tons of hay hen he sows an acre of alfalfa, but e won't get it unless one-tenth of an nce of molybdenum is available in e soil, Dr. W. D. McElroy stated uring a conference on molybdenum nitrogen utilization held here ne 24.

Outstanding authorities on plant nd animal nutrition attended the nference at the McCollum-Pratt stitute for trace metal research. r. McElroy, chairman of the con- rence, is director of the institute, division of the Johns Hopkins Uni- rsity.

Legume crops such as alfalfa, lover and soybeans require traces of olybdenum to convert the inert itrogen of the air into a usable rm for protein synthesis by the lant, Dr. Perry W. Wilson of the niversity of Wisconsin said.

Alfred J. Anderson, the Austra- lian agronomist who first demon- strated the practical value of molybdenum on crops, reported that its use on pasturelands has worked a revolution in the agri- cultural economy of his country. Clover yields have increased from literally nil to as much as three to four tons an acre after applica- tion of a few ounces of a molybden- um chemical, Dr. Anderson said.

Even where no increase in yield ccurs, he said, molybdenum-treated rops often have a higher protein ontent as a result of their improved bility to fix nitrogen from the air, e said. Ranchers using this method ave converted thousands of acres of oor soils into improved clover-grass astures. Land that once supported ss than one sheep an acre now arries three to four animals and ay eventually graze six to seven heep an acre, Dr. Anderson pre- icted.

Last year about 5% of the super- hosphate fertilizer used in the state f New South Wales contained olybdenum at the rate of 1½ lb. olybdic oxide (or equivalent in odium molybdate) per ton of super- hosphate. This development is pro- eeding so rapidly that this year ore than 10% of all fertilizer in hat state will contain molybdenum, r. Anderson estimates.

In discussing developments in the U. S., Dr. Albert E. Kretsch- mer, Jr., of the Everglades Experi- ment Station in Belle Glade, Fla., reported that molybdenum treat- ments have recently been intro- duced in Florida to combat the mineral deficiency disease, yellow spot of citrus.

Many citrus groves lack adequate vailable molybdenum in the soil, he aid. As a result, the trees can't tilize the nitrogen and it accumu- ates as nitrate in toxic quantities n the leaves, causing the character- tic yellow spots between the veins. Trees lose their leaves and yields re low.

With the new treatment, however, he disease can be entirely cured or revented, Dr. Kretchmer said. The rocedure is to include a sodium olybdate application in the regular pray program at rates of one-half o one pound per acre.

Dr. Anderson reported that not nly forage crops, but also all vari- ties of crops grown in Australia are ow being treated with molybdenum. mong them are flax and garden rops like lettuce, turnips, cauliflower nd cucumbers and even cereals hich until recently were not treat- d because they have very low olybdenum requirements. So well stablished is the use of molybdenum in Australia and New Zealand that the total acreage treated is estimat- ed to exceed one million acres.

Developments in the U. S. have not yet reached such proportions in part because molybdenum-deficient soils have been studied much more recent- ly, it was pointed out. Deficiencies occur either because there is not enough mloybdenum present in the soil or because it is in an unavail- able form, as in acid soils.

Dr. Kretschmer cited a recent survey of molybdenum deficiencies that showed about 35 molybdenum- starved areas in the U. S., over 20 of which have been spotted only in the last two years. All of these are in the East, along the Gulf Coast and in the Pacific Northwest. This is to be expected, Dr. Kretschmer stated, since the acid soils of these regions are most likely to contain molybdenum in an unavailable form.

In this country too, he added, molybdenum is being used on an in- creasing number of crops—alfalfa, clover, peas, cauliflower, broccoli and others in addition to citrus. A disease known as whiptail of cauliflower, he noted, has been identified as a molybdenum deficiency and is now controlled by application of a mo- lybdenum chemical.

Dr. Alick T. Dick of Australia stressed the importance of having the proper balance between all trace elements. He pointed out that chronic copper poisoning in sheep may re- sult from a molybdenum deficiency, and that by introducing molybdenum into the animals' diet, severe stock losses have been halted in Australia.

Dr. Kretschmer cited in Florida to support Dr. Dick's statement on the need to know more about the inter- action between different essential elements. Florida, he pointed out, not only has molybdenum-deficient areas, but also regions where mo- lybdenum is present in quantities in excess of plant requirements.

William E. Chace Named Director of Education by MCA

WASHINGTON — Dr. William E. Chace has been named director of education by the Manufacturing Chemists' Assn. Prior to his new ap- pointment Dr. Chace had served as director of publications.

He joined MCA in January, 1954. Immediately prior to this, he was Washington representative for Group Attitudes Corp., New York public re- lations firm. He also served on the staff of the National Fertilizer Assn.

A former college official and teacher, Dr. Chace holds an under- graduate degree from Princeton Uni- versity, an M.S. from the University of Virginia and a Ph.D. from the Uni- versity of North Carolina. During World War II he served as a White House correspondent and for three years was with the Office of War In- formation, British Supply Council, for which service he was decorated by the British government.

$9 MILLION INDUSTRY

YAKIMA, WASH.—With proper management and marketing, legume and grass seed production in Wash- ington should be a 9-million-dollar in- dustry by 1958, Dr. Walter Wills, Extension marketing specialist at Washington State College, said recently in a talk before the Yakima County Crop Improvement Assn.

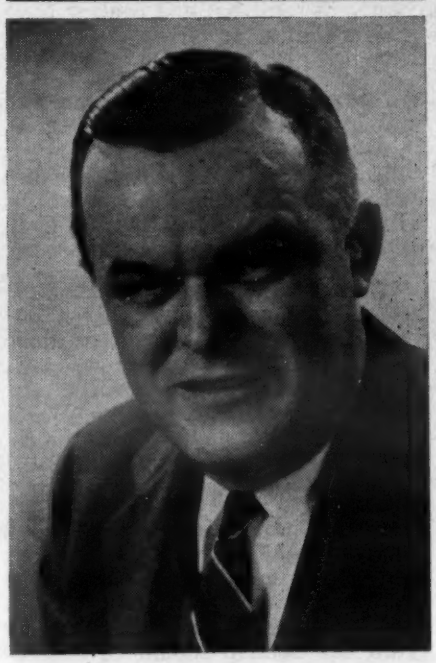
AT MOLYBDENUM CONFERENCE—Dr. W. D. McElroy, right, director of the McCollum-Pratt Institute for trace metal research, welcomes Dr. Alick T. Dick, left and Dr. Alfred J. Anderson, center, of Australia to conference on molybdenum in nitrogen utilization. Dr. Anderson is the agronomist who first demonstrated the practical value of molybdenum in agriculture. Dr. Dick is one of the world's leading authorities on the function of metals in animal nutrition. McCollum-Pratt Institute, a division of Johns Hopkins University in Baltimore, Md., is a center for fundamental research on trace metals where world authorities convene annually to exchange information on their specialties.

Pennsalt Moves to New Philadelphia Office

PHILADELPHIA — The executive offices of the Pennsylvania Salt Manufacturing Co. and headquarters of its operating divisions were moved July 1 to 3 Penn Center Plaza in Philadelphia. Included in the move were Chemical Specialties Division, I. P. Thomas Division, Industrial Chemicals Division, Sharples Chemi- cals Division and Pennsalt Interna- tional Corp. The telephone number, Locust 4-4700, remains unchanged.

DIRECTOR NAMED

NEW YORK—Edward G. Lowry, Jr. of New York has been named a director of Texas Gulf Sulphur Co. to fill the vacancy created by the death of Harvey S. Mudd.



Robert D. Hill

FREEPORT VICE PRESIDENT — Robert D. Hill has been elected vice president and controller of Freeport Sulphur Co., Langbourne M. Williams, president, has announced. Mr. Hill succeeds Richard C. Wells who re- signed as controller of Freeport to become president of National Potash Co., a newly formed company jointly owned by Freeport and Pittsburgh Consolidation Coal Co. A graduate of the University of Pittsburgh in the class of 1938, Mr. Hill has been asso- ciated for the last five years with the Taylor Wharton Steel Co., having served successively as treasurer, vice president and executive vice pres- ident.

Evening Spraying Best for Stored Tobacco Insect Control

WASHINGTON—The Agricultural Marketing Service recommends that pyrethrum sprays or aerosols be ap- plied between 6 p.m. and midnight for the suppression of stored-tobacco in- sects in tobacco warehouses. This time period coincides with the period of greatest activity of the cigarette beetle. Details of the procedure are presented in a publication, "Timing of Sprays to Control the Cigarette Bee- tle," AMS-49, just released by the U.S. Department of Agriculture.

The usual practice in the industry has been to apply these sprays during the normal working day between 7 a.m. and 4 p.m. However, studies last season demonstrated that most of the cigarette beetles—the more difficult to control of the two insect pests of stored tobacco—were in flight in the warehouses between 5 p.m. and 11 p.m. Thousands of beetles were caught in traps after 8 p.m. in ware- houses sprayed earlier in the day.

Complete information about pyreth- rum sprays for this purpose are given in USDA Circular No. 869, "Control of Insects in Stored and Manufactured Tobacco," available up- on request to the Office of Informa- tion, U.S. Department of Agriculture, Washington 25, D.C.

Texas Farmer Wins National Honor

ABILENE, TEXAS—Another honor has come to Clinton J. Harbers, the young "miracle farmer" of Texas. The National Junior Chamber of Commerce has picked Mr. Harbers as one of America's four most out- standing farmers for 1955.

Mr. Harbers, 33, of West Point, Texas, has received widespread at- tention for his rebuilding job on an old, worn-out 620-acre farm. He bought the place several years ago, and while caring for a family of seven and sending two brothers and two sisters to college, built the farm into a $100,000 piece of real estate.

Since then thousands of visitors have come to the farm every year to observe his methods, and Mr. Har- bers has been guest speaker at farm banquets throughout the state.

FIELD DAY SET

EAST LANSING — The annual Crops and Soils Field Day is slated for July 7 at Michigan State College here.

INSECT, PLANT DISEASE NOTES

Light Boll Weevil Count in Tennessee

KNOXVILLE, TENN. — There is very little evidence of boll weevil in the fields at this time. Only five squares have been found punctured out of fifty-six fields examined in various counties this week. Conditions are favorable for weevil development now and some should be showing up in the southern tier of counties where square counts will be possible.

Thrips are found mostly in the terminal growth at this time on the tinder foliage. Since growth has been almost at a standstill the thrips did not have to be in large populations to cause damage. The continual feeding on the same leaves caused considerable damage in most of the area.

Fleahoppers are light at this time but are present in many fields. Some light damage has been caused to the very small squares. Few bollworm egg masses have been found so far in the terminal growth, but eight squares out of 56 fields showed evidence of worm damage. Increases in bollworms are expected as the cotton puts on more growth.

The yellow striped armyworm has been found in scattered fields. Populations are very light in all cases. Grasshoppers are doing some damage to cotton along the outer fringes of fields over most of the area. Plant bugs are found in spots all over West Tennessee. Light damage is occurring in a limited number of fields.—R. P. Mullett.

Moderate Infestation of Boll Weevil Reported

RALEIGH, N.C.—The boll weevil "situation" still looks exceptionally good; in fact, the best, generally speaking, during the past few years. A very few fields are showing a light to moderate infestation with a number of counties still reporting only a few weevils.

Boll worm continued to show a decrease in most counties. County Agent Potter (Anson) reported "no damage now but we had a pretty bad outbreak a few weeks ago. Their damage is hardly noticeable now."

Thrips are causing serious stunting of plants in the lower Piedmont counties. The "dwarfed" effect is worse in fields on heavy soils and where the plants are small and growth is delayed due to cool weather. Thrips are present in most all fields in the state, but where growing conditions are more favorable little "stunting" of plants has taken place.

"Critical Stage" Is Reached in S. Carolina

CLEMSON, S.C.—Cotton growers in Coastal Plains counties of the state are facing a critical stage in insect control. Reports from county agents in these counties indicate that new weevils are appearing and that rains during the week have increased the emergence of overwintered adult weevils.

Entomologists at the Pee Dee Experiment Station, Florence, continue to report a much higher percent of survival of weevils to date than for the 23-year average. They also report a significantly high emergence of adult weevils during the week.

Reports from Piedmont counties show thrips are still present and are damaging cotton in these counties. The boll weevil situation in the Piedmont is apparently not as critical as in the Coastal Plains counties, but weevils are present in Piedmont counties in sufficient numbers to be a menace and to require prompt control.

The reports from 31 county agents show an increasing infestation of bollworms. Fleahoppers and aphids are also reported in several counties. Most of the counties report ample moisture and several report damage from hail.

The reports show that applications of insecticides were made to 134,000 acres during the week to bring the total acreage of cotton which has received applications to date to 195,000 acres in the 31 counties reporting. The county agents estimate an average infestation of 7% in fields where applications have been made as compared with 20% infestations where insecticides have not been applied.

The Clemson Extension Cotton Committee recommends that in view of the critical insect situation in the Coastal Plains counties growers in that section should apply insecticides on a five-day schedule to protect squares and young bolls. Growers in Piedmont counties are advised to continue applications on a seven-day schedule.

Iowa Counts Corn Borer Population

AMES, IOWA—Reports on European corn borer from around the state indicate that in the southern third, corn 30 to 40 in. high, had 100 egg masses per 100 plants. Shorter corn had from 20 to 50 masses per 100 plants. This situation was also reported from Mills, Pottawattamie and Cass counties.

In the Central third of the state, heavy leaf feeding is reported on 35-50 inch corn, with 40 to more than 100 egg counts per 100 plants. In Boone county, 32 fields being observed regularly, had from 0 to 160 egg masses per 100 plants.

The northern third of Iowa reports low moth activity.

There is much more spraying being done this year than last year. Every county in southern and central Iowa reports that some farmers are treating.

Four to six armyworms one eighth to 1 inch long were counted per sq. ft. in oats in Jasper County. There is a heavy flight of female armyworm moths full of eggs. Young armyworms will be cutting oat berries in 10-15 days and starting to move into corn.

Corn root aphid has infested 14 counties in western, southern and central Iowa. Probably infestation is general. Corn looks off-color, isn't growing well (appears to suffer from drouth), and ants are generally present in large numbers. Populations range from 10-50 or more aphids per plant.

Grasshoppers are preventing second growth of alfalfa and red clover. Populations up to 80 per square yard are present in Boone County. Cinch bugs may be present in oats and grain bin cleanup should be emphasized again.

Various aphids are attacking peas, beans, tomatoes, potatoes, rhubarb, and roses in gardens. Each species of aphid appears to limit its attack to certain groups of plants. For example, the pea aphid attacks legumes only.—Harold Gunderson.

Stink Bugs Feature New Mexico Report

STATE COLLEGE, NEW MEXICO—Large numbers of stink bugs are being reported in grain fields throughout the state, which indicates that they will also be numerous on cotton and on alfalfa being grown for seed. Stink bugs attack only the young fruiting bodies of plants, so the grower should keep a watchful eye on his crops when bolls or seeds are being formed. Cotton and alfalfa fields in the right stage of development may become infested overnight by stink bugs which have migrated from surrounding weeds.

Yellow clover aphids are causing considerable damage in many alfalfa fields. Control is difficult because of rapid reinfestation. Many farmers report treated stands are producing high quality hay, but yields are very low due to thinning and reduced vigor. Thrips are abundant on alfalfa and are infesting neighboring cotton fields when alfalfa is cut for hay. Thrips infestations are light to heavy in cotton fields in Dona Ana and Lea counties.

Bollworms are abundant in some alfalfa hay fields in Dona Ana county, and Gray blister beetles are reported in large numbers on alfalfa in Lea county. Aphids are present in damaging numbers on cotton in Dona Ana, Socorro, Roosevelt and Lea counties.

Cotton flea hoppers are reported in small numbers on cotton in Lea county. Lygus bugs also are reported on cotton in small numbers in Lea county. Roundheaded borers are emerging from badly infested willow trees in Mesilla Park and Boxelder bugs are present in large numbers in San Miguel county. The bugs are becoming a nuisance in homes and on the streets.

Grasshoppers are still a major problem on range lands and are becoming more abundant on cultivated crops. Spraying operations are still underway in Lea county; however, high winds and high ground temperatures are hampering the operation. Ranchers in Lincoln county had a meeting to discuss the possibility of spraying 50,000 to 75,000 acres of infested grass lands in the Ft. Stanton-Ruidoso area, but no date was set. Proper timing of insecticide application is difficult because of the very uneven hatching of the grasshopper eggs.

Borers Developing Rapidly in Illinois

URBANA, ILL.—The cool weather of early June greatly changed the corn borer situation throughout much of Illinois. As mentioned last week, borers did not develop during the 10 days of cool weather. Therefore early-planted corn now has enough infestation to warrant spraying.

Roughly, the section between a line from Champaign to Quincy and northward to a line from Joliet to Morrison is the area most involved this week (June 27). Here moth emergence is complete; moth flight and egg-laying are decreasing rapidly.

DDT at 1½ pounds per acre is recommended for corn borer control. If you apply it with a ground sprayer, use 15 to 20 gal. finished spray per acre. The spray on the top third of the plant does the most good; have nozzles so arranged that the whorl and upper third of the plant receive most of the spray. If applications are to be made by airplane, use at least 3 gal. finished spray per acre.

Last week we estimated that between 1 and 5% of the entire acreage in this area would require treatment. In many areas this estimate is still correct, but in others 15% of the total acreage, or possibly more, may warrant treatment.

In northern Illinois, north of a line from Joliet to Morrison, the situation is rather difficult to predict. Moth emergence is almost complete, but a few moths still remain to emerge. Although much of the field corn is still not advanced enough for there to be cause for alarm, there are fields that exceed 40 inches in height with leaves extended, and moths will continue to lay eggs for another 10 days or more in this area. These most advanced fields will definitely be in a susceptible stage of growth at that time.

Grasshopper infestations are still spotted throughout much of the state, and it is impossible to designate specific areas as trouble spots. Young grasshoppers have in many instances migrated into legume fields and also into grain fields where they are beginning to feed on the new seedings of legumes.

If hoppers have migrated through hay fields, use aldrin or heptachlor at the rate of 2 oz. per acre. Either can be applied to within days of harvest, while 30 days must elapse between treatment and harvest when dieldrin at ¼ lb. per acre is used and 40 days with toxaphene at 1½ to 2 lb. per acre. These two insecticides are recommended where residues will not present a problem.

In some instances chinch bugs are abundant on small corn where wheat, rye or some other grass crop was plowed under. Dieldrin at ½ lb. per acre will give effective control and will continue to kill bugs that come into contact with the residue for seven to ten days.

Brown yellow-striped armyworms may be found feeding on corn leaves. Ordinarily of no consequence, the pest can cause some damage when three or more are present on each stalk. Toxaphene at 2 lb. per acre should give adequate control if it is necessary to apply control measures. —H. B. Petty.

"Swarms of Hoppers" Reported in Missouri

COLUMBIA, MO.—The grasshopper situation has not changed during the week. We still have swarms of hoppers, even though considerable spraying has been done in some areas.

Eggs are being laid for the second generation of Mexican and red-legged hoppers; some adult two-striped hoppers are now being found over the entire state; and adult differentials will begin showing up in south Missouri during the next week or so. The hoppers are spreading out rapidly. In most places, we are now past the point where spraying small areas will take care of the situation.

The hoppers are now large enough in most areas to change to adult dosages of the recommended insecticides. Use 1½ oz. dieldrin, 4 oz. aldrin, 4 oz. heptachlor, 1 lb. chlordane or 2 lb. toxaphene per acre.

We are finding a few yellow striped armyworms working late corn. When numerous, these insects can cause a lot of trouble, but they are rarely found in numbers large enough to justify spraying. Only occasional fields are showing damage. If damage is heavy, spray with 2 lb. toxaphene or 4 oz. dieldrin.

Corn earworm damage in the whorl of corn is becoming more noticeable. Expect it to become even more severe during the next week or so, but we still doubt that except in very rare instances, control will pay.—Stirling Kyd and Geo. W. Thomas.

Kansas Reports Both Armyworms and Hoppers

MANHATTAN, KANSAS — Grasshoppers, species destructive to crops, continue to be a problem in many areas of Kansas. There have been reports that fewer grasshoppers are now observed where they were numerous before; this, however, apparently results from the many nymphs that have become adults and moved from the former concentrated areas along fence rows and roadsides on out into the fields. Small nymphs of the differential grasshopper are present in most areas of eastern Kan-

but by far the greatest number grasshoppers observed are late- ar nymphs and adults of the er migratory, the red-legged, and two-lined species.

The chinch bug outbreak in cen- l and in the Flint Hill areas of nsas continues as an increasing reat to many fields of corn and rghum. In this area of the state, arly all milo, sorghum, and corn lds that are adjacent to small ain fields have from light to ere chinch bug infestations. The gration of adult bugs and both l and black nymphs continues d is increasing daily.

n a few localized areas of central eastern Kansas pea aphids still r in very high numbers. Some of fields that were surveyed had nts that ranged from 40 to 120 sweep of a 15-inch net; while eral fields had highs of 600 to 0 per sweep.

Wheathead armyworms were re- ed or observed in fields of the owing counties: Marshall, Riley, coln, Ellis, Russell, Gove, Osborne, ks, Rush, Saline, Ottawa, and kinson. Infestations were light, ever many heads of wheat had parts of the kernels eaten by e larvae.

Yellow clover aphids were found alfalfa in fields of Riley, Lyon, len, Woodson, Greenwood, But- , Marion, Ellis, Russell, and Sa- e counties. Of these counties, the aviest infestation was found in tler County. This infestation was nsidered as light and not requir- insecticidal control at this time. e heavier infestations of this hid on alfalfa still appear to be ncentrated in the south central nsas area.

orn borers were found in field in Allen, Woodson, Greenwood, Lyon counties. The larvae were ut 2nd to 3rd instar and have al- y entered the lower portions of infested stalks. Infestations ged from 4 to 20% in the fields were surveyed.—David L. Mat- v.

eevils Reported m Georgia

THENS, GA.—Seventy-six fields 9 South Georgia counties were in- ted for weevil infestations during week. Fourteen untreated fields e examined and all were weevil sted. Counts ranged from 4 to , with an average of 10.9% ctured squares.

ixty-two treated fields were cked and 61 were infested with boll weevil. Counts ranged from 7% punctured squares with an rage of 2.6%. These records show light increase in weevil infesta- from last week when punctured ares averaged 6.2% in untreated 2.1% in treated fields.

Terminal bud inspections in 19 lds showed a range of 0 to 7 llworm eggs per 100 terminals th an average of 3 eggs per 0 terminals. Bollworm injured ares averaged 0.93% in un- ated fields and 0.24% in treated lds.

ery light to light spider mite in- ations were found in 9 fields. y light to light aphid infestations e found in 13 fields.—C. R. Jor- .

laware Reports a riety of Insects

EWARK, DEL. — A number of icultural pests are reported in aware this week. Cabbage looper, orted cabbageworms, and dia- dback moth are injurious, par- larly in the Lincoln-Georgetown- geville area.

European corn borer and corn worm are damaging early field sweet corn at Mt. Pleasant, nterbury, Lincoln and George- wn and corn sap beetles are con- gregating in injured whorls and tassels.

The weather continues favorable for development of common diseases of cantaloupe and cucumber. Striped cucumber beetle is attacking cucumbers at Thompsonville.—L. A. Stearns and J. W. Heuberger.

Hoppers Widespread In Minnesota

ST. PAUL, MINN. — Grasshopper observations were made in Central, East Central and Southeastern Minnesota during the week ending June 24. Light to heavy infestations of two-striped, red-legged and migratory 'hoppers in West Central Minnesota and in North Central Minnesota and in East Central Minnesota. Heavy infestations noted in Pine and Chisago counties (East Central Minnesota) in uncultivated fields, and in Wilkin County (West Central Minnesota). In Southeastern Minnesota, infestations are generally light with spotted infestations in Dakota, Goodhue and Wabasha counties.

Heavy infestations of armyworms were found in reed canary grass in two townships of Pine County (East Central Minnesota). Small larvae were noted in Itasca and Beltrami counties (Central Minnesota). Infestations of the early generation in the southern counties appear to have diminished by June 27.

Common stalk borer was found moderately heavy in oats in the East Central District during the week of June 20. Heavy injury on tomatoes has been reported from the Twin Cities. Near Lake City (Southeastern Minnesota) where weeds were plowed down adjacent to stone fruit seedlings, borers attacked succulent shoots of the woody plants. Insecticide control is not feasible, but a clean-up of field margins, or mowing about mid-August will reduce host plants on which eggs are laid.

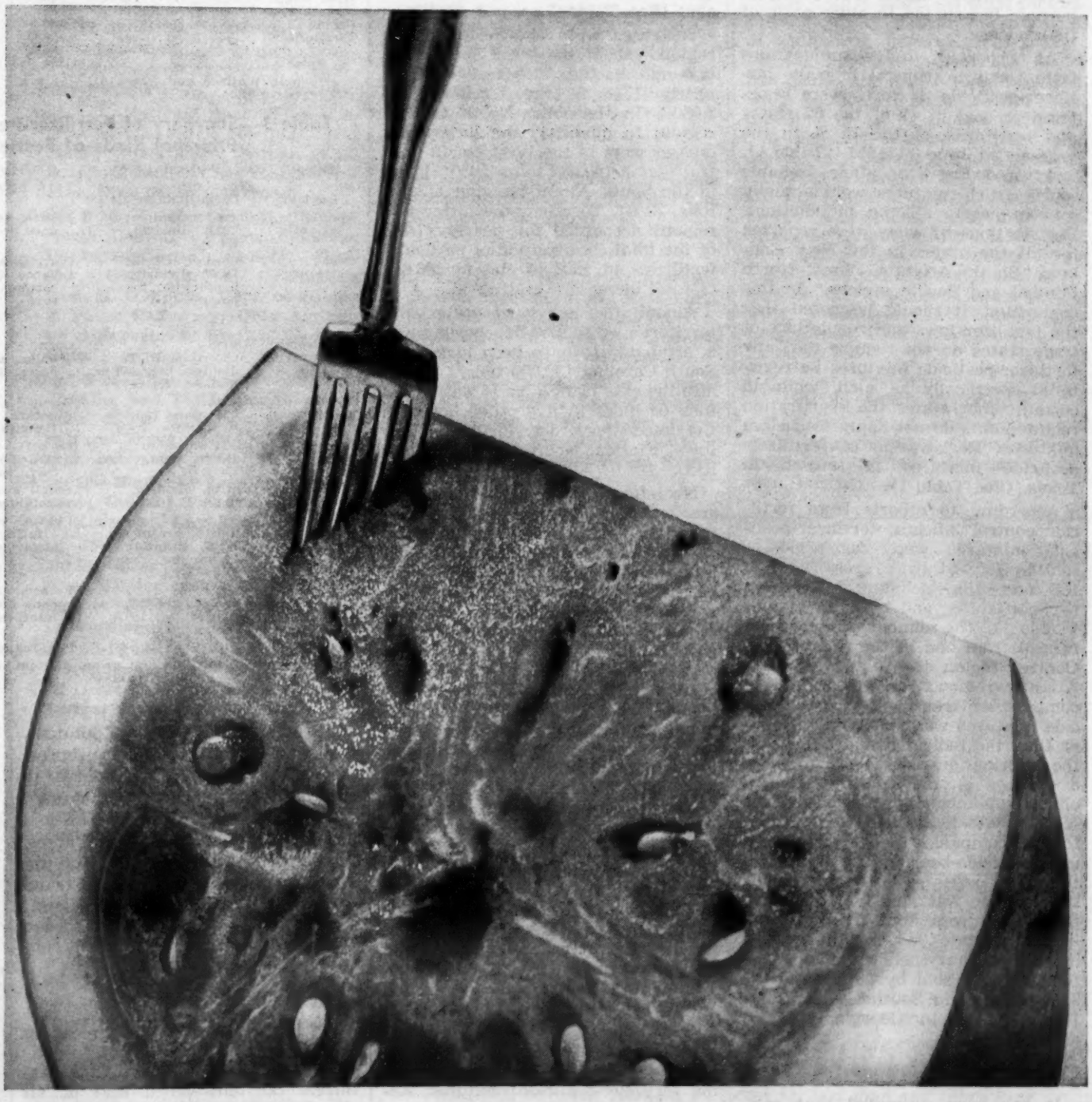
Corn borer moth flights and egg depositions were held at a comparatively low level for the week of June 20 due to the cool weather. At present most of the corn has attained a height favorable for egg deposition. Some shot-holing of corn leaves was observed in the South Central and Southwestern Districts. It is apparent that first generation moths will be laying eggs over an extended period and effective borer control may be difficult to obtain.

Alfalfa Weevil Found in Washington

PULLMAN, WASH. — The alfalfa weevil has been found in Washington, H. S. Telford, Washington State College entomologist, and Roland Portman, University of Idaho extension entomologist, report.

The two men found some of the weevils near Clarkston, Wash. "We found them along roadside alfalfa," Mr. Telford says. "And none in alfalfa fields in the area. So the infestation is very light as yet. And

(Continued on page 21)



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Fertilizer-Pesticide Mixtures in 1953-54

EDITOR'S NOTE

The accompanying manuscript was presented by K. D. Jacob, U.S. Department of Agriculture, during a fertilizer-pesticide forum at the recent preliminary meeting of the National Plant Food Institute in White Sulphur Springs, W.Va. Mr. Jacob is head, Division of Fertilizer & Agricultural Lime, Soil & Water Conservation Research Branch, Agricultural Research Service, USDA, at Beltsville, Md.

Fertilizer-pesticide mixtures have been used in the U. S. for at least 25 years, but it is only since 1948 that serious attention has been given to their possibilities for simultaneously providing nutrients to crops and controlling certain pests. It appears that South Carolina was the first state in which extensive use was made of such mixtures in controlling soil-borne insects attacking field crops. Subsequently, their use for this purpose has spread to other parts of the country.

As reported in communications from fertilizer control officials, fertilizer-pesticide mixtures were registered or sold in 41 of the 52 states and territories of the U. S. in the year ended June 30, 1954, (Table 1), and according to other reliable sources such mixtures were actually sold in nearly all the jurisdictions. Registrations or sales were reported for all the states in the New England, South Atlantic, West North Central and Pacific regions.* In this connection, it should be noted that the fertilizer laws and regulations of some states do not require that any fertilizer-pesticide mixtures be registered specifically as such, while in certain other states the registration requirements do not apply to custom mixtures. Registration of fertilizer-pesticide mixtures is refused in Texas. (See Table 1).

According to reports from fertilizer control officials, fertilizer-pesticide mixtures were registered or sold in 1953-54 by a gross total of 188 companies, including duplications between states and between regions (Table 1). The number of companies ranged from one in the West South Central region to 70 in the South Atlantic region. The gross total of companies marketing fertilizer-pesticide mixtures was undoubtedly higher than the indicated figure, because the information available thereon to a number of the fertilizer control officials, admittedly, was incomplete. No estimate is available for the net total of companies registering or selling pesticide-bearing fertilizers in the U. S. or its several regions, but the number was smaller, of course, than the gross total. Among the individual states, however, it may be mentioned that such mixtures were registered or sold by a net total of 31 companies in South Carolina and 17 companies in Georgia, for example.

Consumption

It has been estimated that consumption of fertilizer-pesticide mixtures in the U. S. and Territories in the year ended June 30, 1953, totaled at least 87,000 short tons (3). Based chiefly on information supplied by control officials, experiment station workers and manufacturers, the total quantity of such mixtures used in the year ended June 30, 1954, is estimated at 149,100 tons or 71.4% more than the consumption in the preceding year (Table 2). Besides a large actual increase in consumption, the figure for 1953-54 reflects more accurate information on the quantities used than was available for 1952-53. Although liquid mixtures of fertilizers and pesticides find some use, the data relate chiefly if not entirely to solid products, and it appears that fertilizer-insecticide mixtures accounted for at least 95% of the tonage. (See Table 2).

Increases were shown in all the regions except the West South Central and Pacific. They ranged from nearly 15% in the territories to 2,030% in the West North Central region. In quantity, the largest increases were in the West North Central region (40,600 tons, 2,030%) and in the South Atlantic region (13,200 tons, 22%). Together, the latter two regions accounted for nearly 77.7% of the total consumption of pesticidal fertilizers in 1953-54 and for 86.6% of total increase over 1952-53.

Among the individual states and territories, the 1953-54 consumption is estimated to have been highest in South Carolina (30,000 tons), as was also the case in 1952-53. It was 10,000 tons or more in five other units, in the descending order North Carolina, Iowa, Florida, Nebraska and Puerto Rico.

No information is available on the amount of fertilizer-pesticide mixtures used in Hawaii. It is known, however, that a very small quantity of such mixtures, prepared by Mainland companies, was sold in the Islands (11). A considerable quantity of nitrogen fertilizer solutions containing insecticides, ineluding DDT, malathion and parathion, was used as foliar applications to pineapples, but the combinations were prepared by the pineapple growers rather than purchased as premixed formulations. Tests are being made of mixtures of fertilizers and insecticides (aldrin, dieldrin, chlordan, heptachlor) for control of root-pitting pests of sugarcane.

On the basis of the data in Table 2, the consumption of fertilizer-pesticide mixtures in the U.S. and territories in 1953-54 amounted to only 0.96% of the total consumption of mixed fertilizers. Among the regions, the proportion ranged from 0.01% in the West South Central to 3.2% in the West North Central, 3.5% in the Territories, and 4.7% in the Pacific.

Only limited information is available on the acreages of land receiving fertilizer-pesticide mixtures. According to Lilly (6), 600,000 acres of corn in Iowa were treated with soil insecticides in 1954, of which 362,500 acres (60.4%) received fertilizer-insecticide mixtures. In Nebraska, such mixtures were applied to 12.7% (220,000 acres) of the 1,740,000 acres of corn that were treated with soil insecticides.

Fertilizer-insecticide mixtures were used on 10% of the 125,000 acres of Illinois corn that received soil insecticides. Use of the mixtures in these states was aimed chiefly at control of the corn rootworm, and aldrin was by far the dominant insecticidal constituent.

It is reported (1) that fertilizer-insecticide mixtures were applied to more than 108,000 acres of cropland in South Carolina in 1954. The following crops were so treated: corn, approximately 100,000 acres, to control sand wireworm, corn rootworm, and seed corn maggot; Irish potatoes, more than 5,000 acres, to control wireworms; pastures, 1,200 acres, to control white grubs; sweetpotatoes, 1,000 acres, to control wireworms and flea beetles; snap beans, 1,000 acres, to control seed-corn maggot; and unknown acreages of cotton (sand wireworm), truck (mole crickets), and lawns (white grubs). Chlordan was the principal insecticidal constituent of the mixtures.

*The regional divisions of the country are: **New England:** Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut; **Middle Atlantic:** New York, New Jersey, Pennsylvania, Delaware, District of Columbia, Maryland, West Virginia; **South Atlantic:** Virginia, North and South Carolina, Georgia, Florida; **East North Central:** Ohio, Indiana, Illinois, Michigan, Wisconsin; **West North Central:** Minnesota, Iowa, Missouri, North and South Dakota, Nebraska, Kansas; **East South Central:** Kentucky, Tennessee, Alabama, Mississippi; **West South Central:** Arkansas, Louisiana, Oklahoma, Texas; **Mountain:** Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada; **Pacific:** Washington, Oregon, California; **Territories:** Territory of Hawaii, Porto Rico, Alaska.

Table 1—States and Territories in Which Fertilizer-Pesticide Mixtures Were Registered or Sold in Year Ended June 30, 1954, as Reported by Fertilizer Control Officials

Region—	Number of states or territories: Total	In which mixtures were registered or sold	Gross number of companies registering or selling
New England	6	6	18
Middle Atlantic	*7	†6	20
South Atlantic	5	5	70
East North Central	5	‡4	9
West North Central	7	7	28
East South Central	4	¶3	10
West South Central	4	§1	1
Mountain	8	**5	10
Pacific	3	3	16
Territories	3	††1	6
Total	52	41	188

*Including District of Columbia which has no fertilizer control.
†All jurisdictions except District of Columbia.
‡None reported for Michigan.
¶None reported for Mississippi.
§Oklahoma.
**None reported for Colorado, Montana and Wyoming.
††Puerto Rico.

Table 2—Estimated Consumption of Fertilizer-Pesticide Mixtures in the United States and Territories

Region—	Fertilizer-pesticide mixtures: 1952-53 short tons	1953-54 short tons	All mixed fertilizers 1953-54* 1,000 short tons
New England	400	950	352
Middle Atlantic	1,000	1,800	1,838
South Atlantic	60,000	73,200	5,022
East North Central	2,500	6,700	3,621
West North Central	2,000	42,600	1,343
East South Central	200	1,200	2,040
West South Central	100	100	713
Mountain	1,100	1,450	56
Pacific	11,100	11,100	273
Territories**	8,700	10,000	283
Total	87,000	149,100	15,541

*Scholl, Wallace and Fox (10).
**Puerto Rico only.

Table 3—Summary of Fertilizer-Pesticide Mixtures with Respect to Principal Kinds of Pesticides, Crops, and Pests

Region	Pesticide used*	Crop treated*	Pest controlled*
New England	Chlordan; DDT, lindane, 2,4-D	Turf, potato	Grubs, wireworms, weeds
Middle Atlantic	Chlordan, aldrin; DDT, dieldrin, 2,4-D	Potato, turf; corn	Wireworms, grubs, weeds; seed-corn maggot
South Atlantic	Chlordan, aldrin; DDT, dieldrin, heptachlor, toxaphene, 2,4-D	Corn (peanut, potatoes, tobacco, vegetables); cotton, strawberry, turf	Corn rootworm, wireworm cutworms, elongated fl beetle, grubs, maggot mole crickets, sweetpota weevil, weeds, whit fringed beetle
East North Central	Aldrin; chlordan, DDT, dieldrin, heptachlor, lindane, 2,4-D	Corn; onion, potato, strawberry, turf	Corn rootworm, wireworm grubs, onion maggo strawberry root wee weeds
West North Central	Aldrin; chlordan, dieldrin, heptachlor, 2,4-D	Corn; potato, turf, vegetables	Corn rootworm, wireworm cabbage maggot, grub onion maggot, weeds
East South Central	DDT, chlordan; aldrin, heptachlor, 2,4-D	Corn; strawberry, tobacco, turf, vegetables	Corn rootworm, wireworm ants, grubs, weeds, whit fringed beetle
West South Central	Aldrin, dieldrin, lindane, 2,4-D	Small grains, turf, vegetables	Grubs, maggots, weeds, wi worms
Mountain	DDT; aldrin, arsenicals, BHC, chlordan, heptachlor, toxaphene, 2,4-D	Potato, vegetables; alfalfa, small grains, sugar beet, turf	Wireworms; cutworms, grubs, maggo weeds
Pacific	Aldrin; chlordan, DDT, heptachlor, IPC† lindane, 2,4-D	Potato, strawberry; cane berries, hops, mint, turf, vegetables	Wireworms, potato flea be tle, strawberry root weevil grubs, spotted cucumb beetle, weeds
Territories‡	Aldrin	Sugarcane	White grub

*For each region, the first group of items designates the major pesticide, crop or pes
†Isopropyl N-phenyl carbamate.
‡Puerto Rico only.

Factors of Use

In 1953-54, as in the preceding year, the total quantity of insecticides applied in mixture with fertilizers far outweighed that of all other pesticides (herbicides, fungicides, etc.) used in this way. Solid mixtures of fertilizers and herbicides were widely used, chiefly on lawns and turf, but in relatively small total quantity. Some use was made of fertilizer-fungicide mixtures.

Attention continued to be given to the possibilities in adding insecticides and herbicides to aqueous solutions of fertilizers applied to corn and other field crops (2, 4). The principal kinds of pesticides, crops and pests involved in the use of fertilizer-pesticide mixtures have been discussed by Jacob (3) and Kulash (5), among others, and some data for 1953-54 are summarized in Table 3.

Aldrin was the insecticide used in the largest total quantity in mixture with fertilizers. Chlordan ranked second and DDT was probably third. Arsenicals, BHC, dieldrin, heptachlor, lindane and toxaphene were among the compounds used in still smaller quantities, and 2,4-D was the principal herbicidal constituent of the mixtures.

Aldrin was by far the dominant pesticidal constituent of the mixtures in the North Central and Pacific regions and the territories. Chlordan was the chief pesticide added to fertilizers in the South Atlantic region and probably in the Middle Atlantic and New England regions. It appears that DDT ranked first in the East South Central and Mountain regions.

Although information on the quantities of fertilizer-pesticide mixtures applied to various crops is quite incomplete, the total quantity of such mixtures used for controlling insect pests of corn, chiefly corn rootworms, wireworms and the seed-corn maggot, was undoubtedly much greater than that for any other crop. It is estimated that corn received more than 50% of the total tonnage of the mixtures in 1953-54. Most of the remainder was applied to potatoes, sugarcane (in Puerto Rico), and vegetables.

Corn rootworms and wireworms—attacking corn, potatoes and other crops—were the chief pests controlled by fertilizer-pesticide mixtures. Control of these pests was probably the objective of at least two thirds of the tonnage of the mixtures used in 1953-54.

As in the preceding year (3), addition of pesticides to fertilizers was mostly to mixtures containing two or more of the primary plant nutrients (N, P_2O_5 and K_2O), and chiefly to mixtures containing all three of the

trients, but in a few instances additions to straight materials—including ammonium sulfate, triple and normal superphosphates, potassium sulfate and gypsum—were made. The quantities of admixed aldrin ranged from 1 to 30 lb. per ton of mixtures; lordan, 0.25 to 10 lb. or more; and DT, 1.5 to 40 lb.

rtilizer-Pesticide Mixtures Foreign Countries

Fertilizer-pesticide mixtures are ed in a number of foreign countries, mong which are Canada, Great ritain and New Zealand. Consumption of such mixtures in Canada in 53-54 totaled about 500 tons, approximately half of which contained fungicide (thiram) for control of ack rot of the sugar beet (7). Mixres used in the next largest quanty contained aldrin, chiefly to conol wireworms attacking corn. Combinations of fertilizers with lindane nd 2,4-D were used to control lawn ests, and mixtures of secondary and race element fertilizers with 2,4-D ere marketed for control of broadaved weeds in cereal crops.

It is reported (9) that 6,200 tons of uperphosphate-DDT mixtures were sed in New Zealand in 1953-54 to ontrol grass grubs and other pests. ixtures of 2,4-D with superphosnate and limestone, respectively, are lso marketed in New Zealand (8).

Addition of aldrin to mixed ferlizers, chiefly the 8-8-12 and 9-9-15 rades, is practiced by several comanies in Great Britain to control oil-borne pests (principally wireorms) of potatoes and other crops. n indicated quantity of aldrin is 4 . per ton added as a 30% emulsion granulated mixtures.

utlook

For the country as a whole the outook is promising for continued rowth in the use of fertilizer-pestide mixtures, according to fertilizer ontrol officials and experiment staon workers. Expanded consumption expected in 32 of the states, especially those comprising the North entral region. Increases are anticiated for all states in the Pacific and outh Atlantic regions and for many the states in the other regions exept the West South Central. Even the last region it would not be urprising if further research leads increased use of the mixtures. Whereas the consumption trend is aid to be uncertain in Puerto Rico, here would seem to be opportunity or expanded use of fertilizer-pestide mixtures in Hawaii.

Thanks and appreciation are extended to the control officials, experiment station workers, and fertilizer manufacturers who supplied most of the information on which this paper based.

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Stauffer Dividend

NEW YORK—The board of directors of Stauffer Chemical Company has declared the customary quarterly dividend of 37½¢ per share to the stockholders of record at the close of business Aug. 18, 1955, payable on Sept. 1, 1955.

SEED DEALERS FIELD DAY

AMES, IOWA — The Iowa Seed Dealers Field Day will be held July 8 at Iowa State College here.

MEETING MEMOS

July 5-8—Plant Food Producers of Eastern Canada, Bigwin Inn, Muskoka, Canada.

July 7—Annual Louisiana Fertilizer Grade Conference, Louisiana State University, Baton Rouge.

July 13-15—American Farm Research Assn., 1955 Research Conference, University of Minnesota, St. Paul Campus.

July 14-15—Southwest Fertilizer Conference and Grade Meeting, Buccaneer Hotel, Galveston, Texas.

July 20-21—Great Plains Agricultural Ammonia Assn. Midwest Trade Show & Field Day; Business Session for Members July 20 at Hotel Fort Des Moines, Des Moines, Iowa; Field Day July 21 near Ames; James Andrew, Box 447, Jefferson, Iowa, Secretary.

July 27-29—Northeast Branch, American Society of Agronomy, University Park, Pa.

Aug. 1-5—National Shade Tree Conference, Annual Meeting, Mar Monte Hotel, Santa Barbara, Cal., L. C. Chadwick, Secretary-Treasurer, Ohio State University.

Aug. 8-10 — Summer Meeting of North Central Division, American Phytopathological Society, Wooster, Ohio; further information from H. C. Young, Dept. of Botany & Plant Pathology, Ohio Agricultural Experiment Station, Wooster, Ohio.

Aug. 9-11—Ohio Pesticide Institute Meeting and Field Tour, Wooster, Ohio; Dr. J. D. Wilson, Ohio Agricultural Experiment Station, Wooster, Secretary.

Aug. 10—Kentucky Fertilizer Conference; Guignol Theatre, University of Kentucky, Lexington.

Aug. 15—National Joint Committee on Fertilizer Application, Cooperative Meeting with the American Society of Agronomy, University of California, Davis Campus.

Aug. 15-19 — American Society of Agronomy and Soil Science Society of America, University of California, Davis Campus.

Aug. 15-20—Farm & Home Mechanization Pageant, Michigan State College, East Lansing, Mich.

Sept. 7-8—Beltwide Cotton Mechanization Conference, Texas A&M College, College Station, Texas, National Cotton Council, P.O. Box 18, Memphis 1, Tenn.

Sept. 7-9 — National Agricultural Chemicals Assn., Spring Lake, N.J.; Lea S. Hitchner, NAC Executive Secretary, 1145 19th St. N.W., Washington 6, D.C.

Sept. 7-9 — Ninth Annual Beltwide Texas A&M College, National Cotton Council of America, Box 18, Cotton Mechanization Conference, Memphis 1, Tenn.

Oct. 17-18 — Fertilizer Section, National Safety Congress, LaSalle Hotel, Chicago; Thomas J. Clarke, Chairman.

Oct. 27—Middle West Soil Improvement Committee, Annual Meeting, Sherman Hotel, Chicago; Z. H. Beers, Executive Secretary, 228 N. LaSalle St., Chicago, Ill.

Nov. 2-3 — Annual Convention, Pacific Northwest Plant Food Assn., Pilot Butte Inn, Bend, Ore.; Leon S. Jackson, 702 Lewis Bldg., Portland, Ore., Secretary.

Nov. 3-4—Northeastern Division, American Phytopathological Society, Eastern States Farmers Exchange, Inc., 26 Central St., West Springfield, Mass. B. H. Davis, Department of Plant Pathology, Rutgers, University, New Brunswick, N.J., secretary.

Nov. 7-8—California Fertilizer Assn., Thirty Second Annual Convention, Hotel Mark Hopkins, San Francisco; Sidney H. Bierly, Executive Secretary & Manager, 475 Huntington Drive, San Marino, Cal.

Nov. 17-18—Nitrogen Solution Field Day, National Nitrogen Solution Assn., State Armory, Springfield, Ill.; Roy F. Broyhill, Dakota City, Neb., meeting chairman.

Nov. 29-Dec. 2 — Entomological Society of America, Netherlands Plaza Hotel, Cincinnati.

Dec. 5-7—Chemical Specialties Manufacturers Assn., 42nd Annual Convention, Roosevelt Hotel, New York; H. W. Hamilton, 50 E. 41st St., New York 17, N.Y., Executive Secretary.

Dec. 5-7—Agricultural Ammonia Institute, Kansas City; Jack F. Criswell, Executive Vice President, Claridge Hotel, Memphis, Tenn.

Dec. 15-16—Beltwide Cotton Production Conference, Hotel Peabody, Memphis, Sponsored by the National Cotton Council.

Dec. 28-30 — American Phytopathological Society, Atlanta, Ga.; Glenn S. Pound, University of Wisconsin, Madison, Wis., Secretary.

1956

Jan. 4-6—Weed Society of America, Charter Meeting, Hotel New Yorker, New York, W. C. Shaw, U.S. Department of Agriculture, Beltsville, Md., Secretary-Treasurer.

Jan. 26-29 — Agricultural Aircraft Assn., Inc., Sixth Annual Convention, Wilton Hotel, Long Beach, Cal.; Wanda Branstetter, Route 3, Box 1077, Sacramento, Cal., Executive Secretary.

Feb. 15-17—California Weed Control Conference, Sacramento and Davis, Cal.; Oliver A. Leonard, Botany Dept., University of California, Davis, Cal., Secretary.

Feb. 15-17—Western Weed Control Conference, Sacramento and Davis, Cal.; W. C. Robacker, U.S. Department of Agriculture, Nevada Agricultural Experiment Station, Reno, Nev., Secretary-Treasurer.

Monsanto Plant in Mexico City Wins Inspection Honors

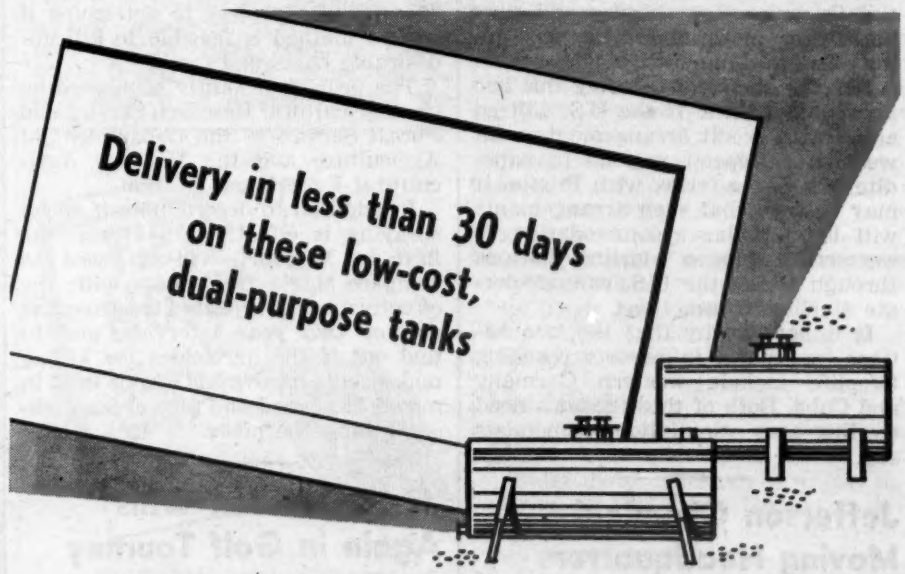
ST. LOUIS—The Mexico City plant of Monsanto Mexicana S.A., has won top honors among eight Group III (small size) plants in the regular Monsanto Chemical Co. plant inspection.

The competition has been a regular event among Monsanto plants during the past 18 years. Judging is done by a touring inspection committee and is based on such factors as plant safety records, maintenance of equipment, general plant housekeeping, appearance of the facility to the public and the community, and with particular attention on any problems of air or stream pollution.

A pennant will be awarded the Mexico City plant which will be flown until the winner of the next Group III inspection is named. Each employee will receive an individual award at ceremonies at a later date. Five other Group III plants were adjudged in the above standard category in the inspection. These plants were Vancouver, B.C., Avon and Long Beach, Calif., Norfolk, Va., and Camden, N.J.

BUYS SEED CONCERN

FARGO — The Sexauer Co., which deals in agricultural chemicals and seeds, has purchased Newday Seedsmen, Inc. here.



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WASHINGTON WIRE

Surpluses Seen As U.S. Bargaining Material at Geneva

By JOHN CIPPERLY
Croplife Washington Correspondent

WASHINGTON — The "summit" meetings of leaders of the Big Four may hold important economic consequence, particularly regarding U.S. agricultural surpluses. Decisions reached at Geneva in July may make a big dent in the wheat and cotton supplies now held by the U.S. Department of Agriculture and change the entire climate of domestic production.

All this comment is speculative, but it is highly reliable speculation. USDA top officials decline to grant any confirmation to the following but make some aside comments which tend to back up the reports obtained from other sources.

It has been reported to Croplife that foreign nations—western Germany and Cuba among others—are asking for long loans from the U.S. to buy U.S. agricultural surpluses which they may use or sell in other markets.

This could mean large sales of wheat and cotton to these nations which would greatly cut into the U.S. surpluses and change the crop acreage restrictions and other controls after 1956.

USDA officials decline to confirm this report but say that they would certainly not object to any sales opportunity which would move U.S. surpluses of wheat or cotton at a loan rate of interest said to be 3½% for the term of the loan, as compared with the storage charges now piling up to Commodity Credit Corporation at approximately 16½¢ bu. per year for wheat.

This item is seen as top confidential in government circles and may be trading material for the up-coming Geneva "summit" conference.

For the chemical industry this has great importance. If the U.S. will go along with credit arrangements with western European nations to expedite any peace terms with Russia, it may be seen that such arrangements will be a dollar accommodation to western European sterling nations through which the U.S. can accelerate sterling transactions.

It is noteworthy that the two nations mentioned in reports reaching Croplife include western Germany and Cuba. Both of these nations need sterling area stimulation, economists say.

Jefferson Chemical Moving Headquarters

NEW YORK — Jefferson Chemical Co. began moving its headquarters offices from New York to Houston July 1. George R. Bryant, president, announced that the new headquarters will be in the Mafridge Bldg. at 411 Fannin St. in Houston.

The move is being made to centralize operations, according to R. A. Parsons, assistant to the president. The firm's main plant is located at Port Neches, Texas, and the research laboratory is at Austin.

The New York sales office will be located at 260 Madison Ave., site of the former headquarters. Other sales offices are located in Chicago, Houston and Charlotte, N.C. Jefferson Chemical is jointly owned by American Cyanamid Co. and the Texas Co.

MEADOW FIELD DAY

FORT COLLINS, COL.—Colorado A & M College has scheduled the third in a series of mountain meadow improvement field days at Hayden, Col. July 19. Fertilization, irrigation control and harvest management of meadows will be the meeting theme.

INDEX NUMBERS

(Continued from page 1)

Mr. Poffenberger points out that index numbers of prices of fertilizer materials were last revised in November, 1942.

"Since that date, many changes have occurred in the fertilizer materials business," he said. "The quantities of various ingredients used have changed markedly, and many new materials have become available.

"Therefore, in order to provide a more realistic picture of the comparative prices of fertilizer materials it was necessary to drop from the indexes some of the materials which no longer represent a significant quantity relative to the total of all fertilizer materials.

"Because of the small quantities of these materials now used, the changes in price of such materials would not significantly influence the combined index.

"Near the end of and immediately following World War II, many new fertilizer materials became available. These new materials are being used in sufficiently large quantities to have a definite influence on the combined index of prices of fertilizer materials.

"Some of the new materials added to the index include triple superphosphate, nitrogen solutions, anhydrous ammonia and ammonium nitrate."

In addition to the tables which accompany this story, the publication also includes both price and index number tables for phosphates and potash and ammoniates.

Missouri Project to Determine Effectiveness Of Tree Spraying

SALEM, MO.—A 36-acre tract of the Clark National Forest has been sprayed in a project to determine if such a method is feasible to kill undesirable hardwood trees.

The project is jointly sponsored by the Agricultural Research Service and Forest Service of the Department of Agriculture and the Missouri Agricultural Experiment Station.

In addition to determining if aerial spraying is effective, the tests—the first in Missouri—will be used to compare single treatments with the effectiveness of repeated treatment at one or two year intervals, and to find out if the herbicides for killing undesirable hardwoods can be used in mixed hardwood and pine areas without killing the pines.

J. G. Jackson Wins Again in Golf Tourney

DES MOINES, IOWA—James G. Jackson, sales representative in the St. Louis area for the Chase Bag Co., successfully defended his championship June 19 as he won the Trans-Mississippi golf tournament here.

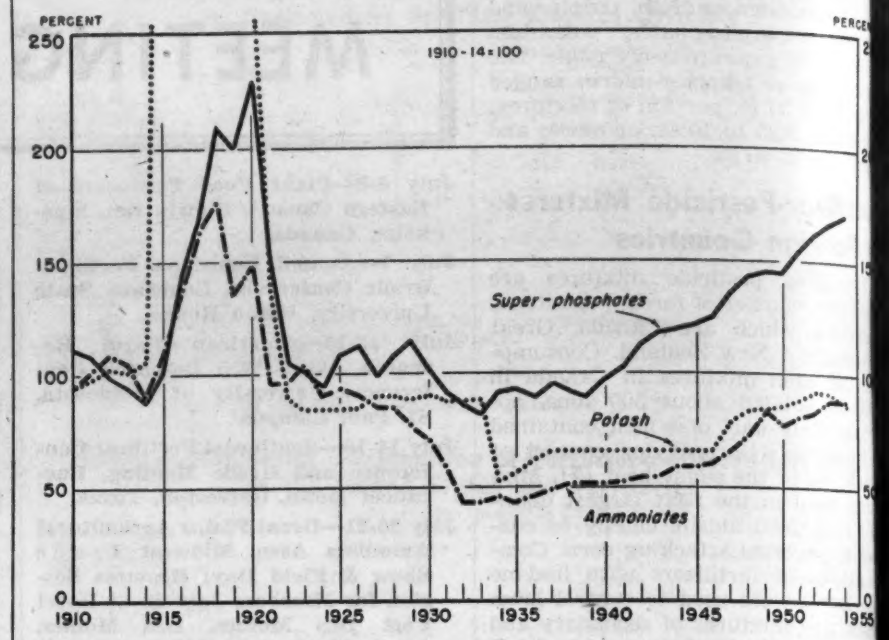
His 2-1 victory over Rex Baxter, Jr., of Amarillo, Texas, duplicated his accomplishment of last year when he also defeated Mr. Baxter for the crown.

An accomplished golfer, Mr. Jackson was on the U.S. Walker Cup team this year.

MINNESOTA FIELD DAY

ST. PAUL—The University of Minnesota's 2,500-acre Rosemount Agricultural Experiment Station, 20 miles south of the Twin Cities, will stage its annual crops and soils field day July 13. Visitors will see high-fertility tests on corn, liming experiments, fertilized alfalfa plots, test areas to determine how long alfalfa stands will last, pasture fertilization and management areas and other experiments.

Trends of Prices of Fertilizer Groups



Combined Index Numbers of Prices of Fertilizer Materials Farm Products and All Commodities

(1910-14=100)

Year	Farm prices	Prices paid by farmers for commodities bought	Wholesale price of all commodities	Fertilizer materials	Chemical ammoniates	Superphosphates	Potash
1910	103	98	103	98	94	112	94
1911	95	99	95	102	102	108	98
1912	99	101	101	104	109	98	102
1913	101	100	102	101	105	94	101
1914	102	102	99	95	91	88	105
1915	99	104	102	292	109	101	629
1916	119	115	125	405	132	145	1,025
1917	178	150	172	464	164	172	1,001
1918	206	175	192	416	177	210	828
1919	218	199	202	271	136	200	473
1920	212	212	225	223	148	230	306
1921	124	146	142	125	96	152	140
1922	131	140	141	96	96	105	90
1923	142	148	147	97	104	102	83
1924	143	148	143	89	91	94	83
1925	156	153	151	93	93	109	83
1926	146	150	146	94	91	112	84
1927	141	148	139	90	86	99	90
1928	149	152	141	92	85	108	90
1929	148	150	139	90	77	114	89
1930	125	140	126	84	70	101	90
1931	87	119	107	76	59	91	88
1932	65	102	95	69	43	85	87
1933	70	104	96	68	43	81	88
1934	90	118	109	58	46	91	51
1935	109	123	117	60	43	92	56
1936	114	123	118	62	46	89	62
1937	122	130	126	66	49	95	66
1938	97	122	115	66	51	92	66
1939	95	121	113	65	51	89	66
1940	100	122	115	67	51	97	66
1941	123	130	127	69	52	102	66
1942	158	149	144	72	53	112	66
1943	192	165	151	73	53	118	66
1944	196	174	152	75	59	119	66
1945	206	179	154	75	59	121	66
1946	234	197	177	77	60	124	66
1947	275	230	216	86	65	136	78
1948	285	250	234	91	72	143	83
1949	249	240	223	98	83	146	84
1950	256	246	232	96	78	145	85
1951	302	271	258	100	81	153	88
1952	288	273	251	104	83	161	92
1953	258	262	246	108	88	166	92
1954	250	264	248	107	88	170	87

Index Numbers of New Fertilizer Materials†

Year	Ammonium nitrate per unit N	Nitrogen solutions per unit N	Anhydrous ammonia per unit N	Triple superphosphate per unit P_2O_5
1944		70	65	116
1945		68	65	116
1946		68	65	120
1947	67	69	65	129
1948	72	71	70	143
1949	81	80	85	153
1950	81	74	81	152
1951	86	76	87	160
1952	89	76	87	163
1953	92	78	92	174
1954	95	81	94	181

†These index numbers are computed on the basis of 1947-49=100 and converted to 1910-14=100 based upon all materials in the respective groups. Although prices for these materials did not exist in early years, these index numbers reflect a level of prices comparable to those materials for which prices did exist.

Special Retail Section

Better Selling

Richer Fields for Dealers

A SPECIAL CROPLIFE DEPARTMENT TO HELP RETAILERS IMPROVE MERCHANDISING KNOW-HOW

COOPERATION PAYS—S. R. Hermansen, owner of the Hermansen Chemical & Steel Co., El Campo, Texas, shown above in front of his store, finds that cooperation with local implement dealers pays off in bigger sales. Implement dealers provide him with more sales leads than any other source. In return, Mr. Hermansen tips off the implement dealers of customers who may be in the market for machinery.

Cooperation With Implement Dealers Pays Off in Sales Leads, Texas Retailer Finds

By RUEL McDANIEL
Croplife Special Writer

In 12 years of selling chemicals, pesticides and fertilizers, S. R. Hermansen has learned that his best source of leads to pesticide and chemical sales are the friendly local farm equipment dealers and their salesmen. Mr. Hermansen owns Hermansen Chemical & Seed Co., El Campo, Texas, in the heart of the rice and cotton-growing belt of the Texas Gulf Coast.

His pesticide and chemical business amounts to about $100,000 a year and it is growing rapidly, he says.

"For several years before I entered this business I owned a farm machinery dealership," Mr. Hermansen explains, "and I still have a financial interest in such a business. Even my former competitors are friendly and cooperative, and so I find that by working closely with them and their salesmen I obtain more leads to potential customers for chemicals and pesticides than from any other source."

Mr. Hermansen visits regularly with the machinery people in his trade area. He talks not only with dealers but also with salesmen. They tell him what farmers recently have bought new machinery for applying chemicals and pesticides to their crops, and what farmers are contemplating buying such machinery.

That means that any farmer who is spending money for equipment to distribute chemicals and poisons certainly is in the market for these elements, and Mr. Hermansen takes down the name and address of each such farmer and he or a salesman immediately contacts the machinery purchaser.

"We usually drive out to see such a prospect," Mr. Hermansen explains. "If he's operating to the extent of buying his own mechanical equipment for distributing the chemicals, that means he's a sizeable operator and his annual purchases of chemicals and poisons will run into the hundreds of dollars at least."

The company employs an outside salesman to handle chemicals, fertilizers and seeds, and these machinery leads go a long way toward keeping him busy. Once he or Mr. Hermansen induces a farmer to start buying from the company, they continue to visit with the farmer at regular intervals and always prior to planting, fertilizer and poisoning seasons.

To compensate the machinery dealers for helping him, Mr. Hermansen frequently passes along tips to them of certain customers of his who are talking about buying spraying equipment or other farm machinery.

Mr. Hermansen has several pieces of equipment which he lends to customers for distribution of chemicals, and when he sees that a farmer borrowing this equipment is using enough fertilizers and chemicals to justify his buying his own equipment, he passes this information along to cooperating machinery dealers so that they may have an inside track in selling the farmer his spraying and distributing units.

Although the Hermansen concern depends largely on personal contacts to sell pesticides and chemicals, it uses a modest amount of newspaper advertising regularly (the town has a weekly and a semi-weekly paper) and an occasional "spot" on the local radio station. Mr. Hermansen says that he obtains better results from newspaper space.

MORE PASTURE

CORVALLIS, ORE.—More pasture, silage and hay may be the big need in Oregon if farmers and ranchers are to take greatest advantage of increasing feed grain supplies, says M. D. Thomas, agricultural economist at Oregon State College.

SHOP TALK OVER THE COUNTER FOR THE DEALER

By EMMET J. HOFFMAN
Croplife Merchandising Editor

Understandably, self-service principles will not become the economic savior of the farm chemicals dealer because other sound merchandising ideas cannot be ignored if the merchant wants to stay away from red ink.

There are ways, however, for the dealer to utilize self-service to increase sales and cut costs. Many are in successful use.

Intermediate self-service steps, such as pre-packaging items for open displays in the regular clerk-service stores and check-out counters, can be seen in many enterprising stores dealing in agricultural products.

Like many other retailers, the farm chemicals dealer has such pressing problems as trying to serve customers quickly during a rush period, getting and retaining competent sales help and maintaining profit margins in the face of high operating costs.

Merchants are attempting to overcome these problems by stepping up modernization programs, merchandise promotion and advertising efforts and, in addition, are trying self-service principles as a sales stimulus and cost reducer.

There are many cases on record where retailers have increased volume 25% to 60% by installing self-service practices. These increases, true enough, have been in stores where it was possible for self-service to overcome to a great extent the rush period service bottleneck and which adapted themselves well to increased "impulse" buying. However, it should be noted that "impulse" buying prevails in almost any self-service type of retailing.

Dealers in farm chemicals have not yet begun to solve all the problems connected with self-service operations.

Further, it does not appear likely at this date that the farm chemicals store will ever become 100% self-service. Fertilizers, pesticides, insecticides and equipment for applying them must still be sold "personally" and will for a long time to come. But the self-service trend must not be overlooked. Where the retailer can use it, this should be done.

The next time you're in a supermarket, watch self-service principles in action. Supermarkets to a large extent have pioneered and developed these principles and are outstanding exponents of this type of merchandising. Their profitable use of self-service puts the stamp of success on this type of merchandising.

Let Clerks Help

Sales help efficiency can be improved if you'll instruct your staff properly, recent U.S. Department of Agriculture experiments show.

One experiment consisted of introducing a new product handling practice in a retail store. The employees in the experiment first were shown a film on the new work practice. Then an open discussion followed. Each employee was handed printed material on the practice which he was told to read. A briefing session with the store manager concluded the instruction. Increased sales of $4.96 per clerk hour were noted.

The second experiment consisted of introducing the same work practice to a comparable group of employees in a similar line of business. A gain of $3.47 per clerk hour occurred when the store manager met with his supervisor, saw a motion picture on the subject and was given copies of published material to discuss and give to his clerks.

A gain of only $1.33 in sales per clerk hour followed when memoranda and published material on the same subject were mailed to the store manager for discussion and distribution to his clerks.

By RAYMOND ROSSON
County Agent,
Washington County, Tenn.

The farmers of America gave us our first July 4. Birthdays mean much to all of us, young or old. This July 4 we will celebrate our 179th birthday and we are proud—glad that our nation is as old as it is.

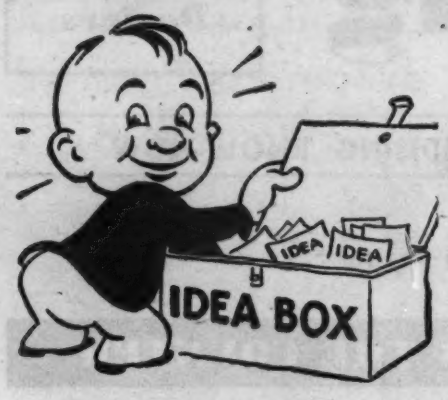
On our first birthday, our total population was about 3,000,000. There were some 2,700,000 farmers and only 300,000 non-farmers, or nine to one. Nine farmers fed themselves and one extra person. Now, one farmer feeds himself and family and about 17 non-farmers. Philadelphia was the largest city with a population of 30,000.

During the first 50 years of American Independence, the citizens had to get weaned away from royalty and accustomed to loyalty. We get pretty tired sometimes trying to weed out the false from the true patriots.

There has always been a lot of

(Continued on page 14)

Better Selling
Richer Sales Fields for Dealers



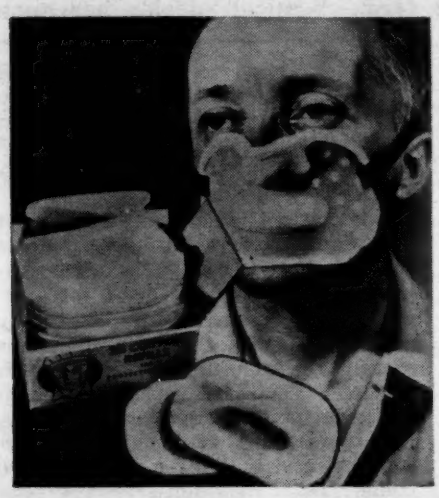
What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6163—Mask, Dust Filter

A light protective mask which weighs less than ½ oz. has been announced by the General Scientific Equipment Co. Made of soft rolled



aluminum, it is said to be so pliable that it fits any shape face. It is recommended for protection against ordinary non-toxic dusts and spray hazards and may be worn with goggles. No metal touches the skin. Filter discoloration, caused by dust, is indicated in the picture. For more complete details check No. 6163 on the coupon and mail it to this publication.

No. 6274—Soil Test

Iowa State College's film production unit has produced a 22-minute film entitled "Soil Test." Produced under supervision of the college's agronomy department, the film is available for rent or purchase for $190 a copy. For rental information a regular film library or the Visual Instruction Service, Iowa State College, Ames, may be contacted. Preview prints are available for those interested in purchasing the film. The only charge for the preview film is for insurance and return postage. For purchase information write: Print Sales Manager, Film Production Unit, Alice Norton House, Iowa State College, Ames.

No. 6273—Liquid Level Gauge

A new magnetic liquid level gauge designed for use in anhydrous ammonia or LP gas storage, mobile and

applicator tanks has been introduced by the Rochester Manufacturing Co. Called the Criterion, it features a new headplate design, tested to withstand 1,200 lb./sq. in. pressure and new shrouded gear assembly which transmits float arm movement to the dial, according to the manufacturer. A "snap-on" dial permits field replacement of a damaged dial without removal of the entire gauge and emptying of tank contents. For more details check No. 6273 on the coupon and drop it in the mail.

No. 6162—Sprayer

A heavy-duty sprayer, called by the trade name, Hy-Row sprayer, has been developed by the O. W. Kromer Co. The sprayer features a 25 h.p. driving engine and is said to be suitable for cotton and tobacco spraying, as well as corn borer control and all types of custom spraying. It has a heavy-duty low-speed tractor transmission which allows continuous operation in all speeds. The clutch is a Rockford disc oil clutch. The tank and booms are claimed to be resistant to corrosion and rust from all spray chemicals and concentrated fertilizers. The tank has a 225-gal. capacity. Booms are raised and lowered automatically by a hydraulic pump. A 3.6 h.p. auxiliary engine provides mechanical agitation and drives the 2-cylinder piston pump which produces 9 gal. per minute at 400 lb. pressure. To secure more complete information check No. 6162 on the coupon and drop it in the mail.

No. 6259—Nitrogen Solution Pump

The John Blue Co. has recently announced production of its new nitrogen solution pump, model "NSP." This pump is fully enclosed and has approximately 2½ times the output of the "NSC" which it supersedes. The pump is ground driven and, when mounted on one of the Blue trailer type rigs (such as the Nitro-Shooter series "20-NS") up to 75 gal. of solution per acre may be applied when fertilizing four 40-in. rows, the company announcement states. The pump is designed for use with both non-pressure and pressure solutions (including aqua ammonia). All working parts operate in a bath of oil inside an inclosed, dust tight crankcase. A "double lip seal" protects the crankshaft from solution and prevents contamination of oil, it is claimed. The pumping end is constructed of non-corrosive materials such as stainless steel and aluminum. To secure more complete details check No. 6259 on the coupon and mail it to Croplife.

No. 6169—Seed Treatment

A new six-page folder on how to treat seed with Heptachlor has been published by the Velsicol Corp. The folder, which is free upon request, demonstrates how Heptachlor is used, when to treat seed, how to treat seed and points out special advantages of Heptachlor for seed treatment. A table shows the rates of application for standard Heptachlor formulations for wireworms, seed corn maggots, southern corn rootworm and sugar beet root maggots. According to the information in the folder, the product insures protection of cucumber seeds, corn, beans, oats, wheat, onions, sugar beets and other seeds. The folder is available by checking No. 6169 on the coupon and dropping it in the mail.

No. 6257—Chemicals Handling

A booklet entitled, "Materials, Machines & Motions" has been compiled by Sauerman Bros., Inc. The information in the booklet relates to handling of chemicals. It describes in words and pictures the company's machinery in use by such firms as International Minerals & Chemical Corp., Duval Sulphur & Potash Co., Lion Oil Co. and Davison Chemical Company Division of W. R. Grace & Co. Methods of handling phosphate, ammonia and potash are described. To secure the 24-page booklet check No. 6257 on the coupon and mail it to Croplife.

No. 6256—Irrigation Pump Bulletin

A new bulletin describing its line of pumps for irrigation service is available from the Deming Co. The bulletin describes deep well turbine, end section centrifugals, portable centrifugals, and portable self-priming centrifugal pumps with capacities up to 3,500 gal. per minute. Most models are available skid mounted or on rubber tired mounts equipped with gasoline engine. The bulletin gives tables for determining: The amount of water needed; how often to irrigate; when to irrigate and rate of application; friction loss of water in pipe; and equations required for de

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

Send me information on the items marked:

- ☐ No. 5210—Bag Poster
- ☐ No. 6163—Dust Filter
- ☐ No. 6164—Crabgrass Film
- ☐ No. 6167—Bulletin
- ☐ No. 6168—NH_3 Hoses
- ☐ No. 6256—Pump Bulletin
- ☐ No. 6257—Chemicals Handling
- ☐ No. 6258—Bulk Scale
- ☐ No. 6259—Pump
- ☐ No. 6260—Meter
- ☐ No. 6261—Ant Powder
- ☐ No. 6162—Sprayer
- ☐ No. 6169—Seed Treatment
- ☐ No. 6270—Nitrogen
- ☐ No. 6273—Level Gauge
- ☐ No. 6274—Soil Film

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rmining other factors related to roper pump use and selection. Se- ure the bulletin by checking No. 56 on the coupon and dropping it the mail.

No. 6270—Nitrogen

New literature has been prepared y the Grand River Chemical Division Deere & Co. on its new product, itrea. The literature describes the roduct as being composed of "45% itrogen fertilizer from urea." Prilled nto a bead-like shape, the product called "non-caking" and "free flow- g." One folder contains recommen- ations for its use on rice with sec- ons devoted to its use in Texas, rkansas, Louisiana and California. nother folder has recommendations or its use on corn, sorghums, small rains, pastures, grass crops, cotton nd sugar beets, the number of ounds to apply and common meth- ds of application. Secure the litera- ure by checking No. 6270 on the oupon and mailing it to Croplife.

No. 6260—Moisture, Fertility Meter

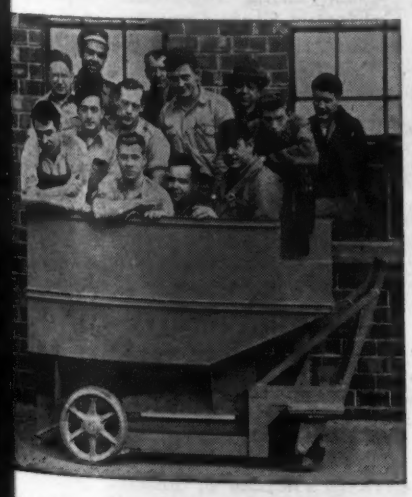
A new descriptive catalog is offered y Industrial Instruments, Inc., on oil moisture measurement and irri- ation control. The catalog describes n detail the various methods of soil noisture and fertility measurements ased upon the electrolytic conduc- ivity principle as developed by Dr. George Bouyoucos. The publication lso lists the necessary equipment for he various tests and controls, in- luding the Bouyoucos cells, moisture eter and irrigation controller, etc. The catalog may be obtained by cir- ling No. 6260 on the coupon and ailing it to this newspaper.

No. 5210—Bag Handling Poster

A poster designed to curb careless andling of multiwall paper bags has een prepared by the Fulton Bag & otton Mills. The poster, printed in ed and black, is designed for use on ulletin boards and in other plant reas. Cartoon technique is used in he illustrations and the text is brief nd to-the-point. The poster may be btained by checking No. 5210 on the oupon and mailing it to this news- aper.

No. 6258—Bulk Scale

Recently the Burrows Equipment o. built a special 1-ton capacity Eze Move bulk scale for Turner Seed & upply Co., Villa Grove, Ill. This icture taken at the factory prior to aking shipment shows the capacity



of the equipment. The scale will be sed for receivingg, handling, weigh- ng bulk phosphate, super and rock, otash, sulphates and various forms f nitrate by Turner. The unit com- ines a large size platform scale with stainless steel hopper. To secure ore details about this scale check o. 6258 on the coupon and mail it o Croplife.

No. 6168—NH₃ Hoses

Manufacturers and users of anhydrous ammonia as fertilizer have available three new types of hose manufactured by the Thermoid Co. Amoflex type No. 1 for bulk loading is made in 1¼, 1½ and 2 in. ID sizes and handles working pressures of 350 to 400 psi—available in 50-ft. lengths only. Amoflex type No. 2 for handling anhydrous ammonia in delivery and storage up to 350 psi is manufactured in ½ in. ¾ in. and 1 in. ID sizes—available in long lengths. Amoflex type No. 3 for applying ammonia from portable field tanks made in ¼ in. and ⅜ in. ID—is also available in long lengths and permits working pressures up to 150 psi. To secure more complete information check No. 6168 on the coupon and mail it to this newspaper.

No. 6164—Crabgrass Film

A new slide film in sound and color titled, "Prevent Crabgrass and Other Weeds with Crag Herbicide-1" is now available. This 7-min. film will be lent without charge by Crag Agricultural Chemicals, Carbide & Carbon Chemicals Co., a division of Union Carbide & Carbon Corp. To secure the film on loan check No. 6164 on the coupon and mail it to this publication.

No. 6167—Insecticide Bulletin

Prentiss Drug & Chemical Co., Inc., has just published an information bulletin on Prentox Pyronyl "75", an oil-free pyronyl concentrate. The bulletin states that the product is a new development in the field of pyrethrum insecticides, "incorporating the rapid killing power and complete freedom from toxicity of pyrethrum and the stabilizing and insect repellant activity of piperonyl butoxide. It contains no kerosene, no odorless base oil, nor any other solvent." The most important area claimed for the use of Prentox Pyronyl "75" will be in the field of grain protection. It provides a method whereby a grain protectant entirely free of oil may be applied directly on the grain. To secure the bulletin check No. 6167 and mail it to this publication.

No. 6261—Ant Powder

A consumer package of ant powder containing dieldrin has been announced by J. T. Eaton & Co., Inc. The package, which is a circular hand-squeeze applicator, weighs 3 oz. and its trade name is Rough and Ready ant powder. To secure more details about this product check No. 6261 on the coupon and mail it to Croplife.

CFA Scholarship Winners Announced

SAN MARINO, CAL.—Terry Dewitt Cook and George M. Kihara have been awarded the two 1955-56 scholarships of the Soil Improvement Committee of the California Fertilizer Assn. which go to outstanding and deserving soil and crops students of California State Polytechnic College, San Luis Obispo campus.

Four scholarships, in the amount of $100.00 each, go to the two students on each of the two Calpoly campuses who are chosen for the honor by the scholarship committees of the two branches of the school. The awards to students at San Dimas will be made at a later date.

SOILS MAN NAMED

LARAMIE, WYO.—Leroy Painter has been named assistant professor of soils at the Wyoming College of Agriculture.

What's Been Happening?

This column, a review of news reported in Croplife in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

The U.S. Department of Agriculture issued its national bulletin outlining disbursement of some $250 million in the 1956 agricultural conservation program. There are no major changes in the program. . . . The Department of Health, Education & Welfare outlined the conditions under which it will extend the effective date for the new Miller Law to apply to pesticides on a product-by-product basis.

Fertilizer consumption during 1954 totaled 20,508,000 tons, for a new record, according to the National Plant Food Institute. A NPFI survey shows, however, that sales for the 1954-55 fiscal year may be down as much as 4%.

About 900 attended the preliminary meeting of the National Plant Food Institute, being formed by the consolidation of the National Fertilizer Assn. and the American Plant Food Council. . . . W. E. Shelburne was named president of Armour Fertilizer Works. . . . New president of Pennsylvania Salt Manufacturing Co. is William P. Drake, 42, youngest president in Pennsalt's 105-year history.

Prospects are that the U.S. may produce over four million tons of synthetic nitrogen annually by Jan. 1, 1957, it was confirmed by U.S. Department of Agriculture officials. . . . Production of pesticides in the U.S. for the first three months of 1955 showed increases ranging up to 100%. . . . The high value of controlling cotton insects with chemical insecticides has been clearly demonstrated throughout 16 years of experiments at Waco, Texas, the USDA reports.

A survey taken by Virginia's state chemist, Rodney C. Berry, indicated that more states are permitting the sale and distribution of fertilizer-pesticide mixtures than were so numbered in a similar survey taken in 1954. Six more states reported that mixtures were being sold within their borders than were noted in last year's questionnaire.

Gypsy moth and budworm spraying projects were being undertaken in Maine and New Mexico. More than a half million acres of timber was set for treatment and about that many pounds of DDT were to be used. . . . USDA announced promising results from two new systemic insecticides for control of cotton pests. . . . John E. Sanford, president of Armour Fertilizer Co., Atlanta, Ga., retired after a career of 45 years in the fertilizer business.

John F. Gale, economist and editor for the National Fertilizer Assn., Washington, D.C., joined the staff of Garden Foundation, Inc., Baltimore, Md. . . . Dr. Edward L. Chandler was appointed to the technical staff of Diamond Alkali Company's Chlorinated Products Division, Cleveland. . . . The University Fertilizer Corp. was formed in Madison, Wis., with authorized capital stock of 1,250 shares, no par value.

Davison Chemical Co., Division of W. R. Grace Co., announced that a new professorship has been established at the Johns Hopkins University, Baltimore, to be known as "The Grace Chair of Chemistry." The position will be filled by Dr. Paul H. Emmett of the Mellon Institute of Industrial Research, Pittsburgh.

Fertilizer consumption, tonnage-wise, was down 2.73% for the 1953-54 fertilizer year, according to the annual USDA report published in the May 30 issue of Croplife. However, consumption of plant nutrient materials was up 4.42% over last year's record level. The middle west con[illegible]ed to be the area of most increase in consumption in both actual tons u[illegible] and percentagewise.

Escambia Bay Petrochemical Co. broke ground in Florida for its new $25 million plant. It will produce 250 tons anhydrous ammonia daily when completed next January. . . . The U.S. Forest Service sent out bid invitations for spray operations and chemicals to be used in a spruce budworm control project in Montana. Over 2 million acres are to be treated.

Robert Q. Parks was named general sales manager of Grace Chemical Co. He will continue to work out of Memphis, Tenn. . . . Glenn O. Middleton was appointed manager of the Dubuque, Ia., sales office of Virginia-Carolina Chemical Corp. C. Aubrey Clayton was made assistant manager of the Dubuque office.

Croplife's issue of May 23 reported that the Hoover Commission for the reorganization of the executive branch of the federal government has criticized the operations of TVA as being in competition with private fertilizer business. . . . Pittsburgh Coke acquired the agricultural chemical program of the Ethyl Corp.

The Radco fertilizer companies of southwestern Iowa merged with Chemical Enterprises, Inc., New York. . . . Charles E. Wilson was named chairman of the board of directors of W. R. Grace Co., marking the first time in 101 years that anyone other than a member of the Grace family has held this position.

The U.S. Department of Agriculture in its "Fertilizer Situation" report, said that the 1954-55 supply of nitrogen will be about 5% higher than that of the previous season. Potash was reported to be 0.6% higher, but the phosphorus supply was estimated to be down 3.3%.

Construction of the first nitrogen products plant in Indiana began May 9 by Calumet Nitrogen Products Co. near Hammond. It is reported to be the largest plant in the U.S. to make anhydrous from refinery by-product hydrogen. . . . An expanded market for grain protectants was indicated when the Food and Drug Administration and USDA began to promote higher sanitation standards for the nation's cereal supplies.

CROPLIFE

TRADE WINDS

News That Charts Selling Opportunities for Dealers

CALIFORNIA TESTS SHOW

Range Fertilization Pays Off During Years of Low Rainfall

SAN FRANCISCO—Range fertilization appears to hold as much promise during low rainfall grazing season as when moisture is adequate, reports Glen Eidman, farm adviser, of Glenn County in northern California.

During the growing season of 1953-54 it was demonstrated on the J. W. Sevier ranch, west of the town of Willows, that proper range fertilization could increase beef production by five times over production on unfertilized land.

The question immediately arose as to whether the same effect would result during poor grazing seasons. To study this and the carryover effect of last year's trial, a new project was planned for the 1954-55 season by agricultural workers of the University of California.

An additional 200 acres were fenced and fertilized during November of last year with 60 lb. actual nitrogen per acre. The fertilizer used was urea and was applied by airplane because of rugged terrain.

In spite of certain adverse conditions, such as cold weather and a drought, the results of this test, measured this spring, showed that in the controlled area, the unfertilized grazing land produced beef at the rate of 21.5 lb. per acre. The field which had been fertilized in 1953 but not in 1954 produced 50.5 lb., and the field fertilized in November, 1954, produced 74.5 lb. beef to the acre, or more than three times the unfertilized field.

The preliminary weighing confirmed the carryover effect of the previous year's trial, Mr. Eidman reported, and supported the belief that fertilization will respond during periods of low rainfall.

New California Law

SACRAMENTO—Gov. Goodwin J. Knight has signed into law a bill by Sen. Paul Byrne adding a section to the Agricultural Code of California making it unlawful to deliver any material used in pest control or other agricultural operations which the Department of Agriculture has found to be injurious to persons, animals or crops unless the person to whom it is delivered, or his agent, signs a written statement in a form prescribed by the department, that such person holds a valid permit to use the kind and quantity of such material or herbicide delivered. The law becomes effective Sept. 8, 1955.

CCC Fertilizer Barter Deals Top $20 Million

WASHINGTON—More than $20 million worth of fertilizer has been delivered in Commodity Credit Corp. barter contracts during the period of July 1, 1954 through May 31 of this year, the U.S. Department of Agriculture has reported. The May total was $87,000 and the total for the first 11 months of the fiscal year was $20,168,000.

PESTICIDE SAFETY

SAN FRANCISCO—Close to 12,000 varieties of pesticides are being marketed in California, according to a report of the California State Department of Agriculture. Partially because of the large number, many pesticide manufacturers have undertaken an educational campaign to impress users with the necessity of observing strict safety precautions in regard to their use. Allen B. Lemmon, chief of the Bureau of Chemistry, said that particular attention is attached to the label, and these labels are studied by his office before marketing is permitted. He said that 2,007 samples of pesticides were examined last year.

Washington Field Day Visitors See Crops of Future

PULLMAN, WASH.—A look at tomorrow's crops and plant varieties in the making was provided Inland Empire farmers who attended Washington State College's first annual Forage-Conservation field day recently.

The all-day event, sponsored jointly by the college's Department of Agronomy and the Soil Conservation Nursery, was held at the Nursery Farm, and the Soil and Water Conservation Research Station.

Visitors inspected variety plantings of legumes and grasses, seed stocks of over 40 strains of new and improved grasses and legumes, and looked over plots of new plant materials from around the globe sent to the regional plant introduction station located at the college.

Some 10,000 bluegrass hybrids which are part of one of the nation's outstanding plant breeding projects attracted special attention. Prospective turf, pasture and range bluegrasses are included in the trials. The Carnegie Institution is conducting the research in cooperation with the Soil Conservation Service.

Rapid Sales Reported For Western Fertilizer Handbook

SAN MARINO, CAL.—The Soil Improvement Committee of the California Fertilizer Assn. reports that the second edition of the Western Fertilizer Handbook is selling at a rapid rate. Ten thousand copies of this edition were printed last October to supplement the 15,000 which made up the first edition.

Earle J. Shaw of Los Angeles, chairman of the Handbook subcommitte suggests that members of the association and others interested in this treatise on soil fertility, plant nutrition, irrigation, etc., place orders now for their full requirements of the Handbook.

The twelve chapters cover the following subjects—Western Agriculture and Attitudes; Soil and Water; Organic Matter; Inorganic vs. Organics; The Plant—The Cell; Plant Food Elements; Diagnostic Tests for Soil and Crop Problems; Commercial Fertilizers and Agricultural Minerals; Use of Fertilizers; Western Laws Relating to Fertilizing Materials; History and Purpose of California Fertilizer Association; and Economic Importance of Fertilizers. In addition, the Handbook contains a useful glossary of tables, terms and conversions.

Mr. Shaw pointed out that the Handbook sells at $1 per copy, including mailing charges and California sales tax, and can be obtained, while the supply lasts, upon prepaid order directed to the California Fertilizer Assn., 475 Huntington Drive, San Marino 9, Cal.

College Gets Funds for Nitrogen, Phosphorus Study

STATE COLLEGE, N. M.—Three farm chemicals firms have donated $7,500 to the New Mexico A & M College Agricultural Experiment Station for research on the availability of nitrogen and phosphorus in high-lime soils.

Contributing $2,500 each are Olin Mathieson Chemical Corp., Baltimore, Phillips Co., Bartlesville, Okla. and International Minerals and Chemical Corp., Chicago. Results of the research will be published in A & M bulletins and research reports next year.

Demonstration Farm

NEW BRUNSWICK, N.J.—Rutgers University has purchased a 100 acre farm, adjacent to its dairy research farm in Sussex County. Local fertilizer dealers will cooperate with Rutgers to use the farm as a demonstration of "how an old farm can be renovated in a hurry."

LAND-CLEARING—A few squirts of 2,4-D shot into blue oak trees will kill the tree and clear the land for agricultural use or for livestock grazing land. Oliver A. Leonard, shown above, weed control specialist on the Davis campus of the University of California, has demonstrated this recently Mr. Leonard cuts through the bark of each individual tree near the base by use of a hatchet, and covers about one third of the circumference of the trunk with cuts. Then he squirts the chemical, about one-half teaspoon of the amine form of 2,4-D per inch of tree diameter. The tree will die in about a year, he has discovered, and before the second year is over will topple to the ground.

New Firms Register For California Sales

SAN FRANCISCO—Twenty new commercial fertilizer manufacturing firms had registered in California between Dec. 14 and March 15 to sell agricultural fertilizers in the state for the fiscal year ending next June 30.

Seventeen of the twenty were listed as "new" registrants and of the remaining three, the Chemical Fertilizer Co. of Modesto, Cal., was a change of ownership and two, the Nitro-Gas Co. of Fresno and the Olin Mathieson Chemical Corp., Little Rock, Ark., represented changes of name.

Eleven firms are located in northern California, five in the southern half of the state, and the remaining four are selling from out of state locations.

New firms registering with the California State Department of Agriculture through the bureau of Chemistry, to sell agricultural minerals during the current fiscal year totaled seven over the same three-month period, including one jobber, Rocca-Cuvi-, Inc., of San Francisco. Six of the firms are in northern California and the seventh in southern California.

$140 Million Investment

SAN FRANCISCO—More than $140 million has been spent in the construction of new chemical plants or in plant improvements in the San Francisco Bay Area in a nine-year period. Thomas J. Mellon, president of the San Francisco Chamber of Commerce, pointed out this fact at a luncheon meeting of the Northern California Chemical Progress Week Committee at the St. Francis Hotel here, in honor of chemical industries in the area. The figure represented 158 new plants built between 1946 and the end of 1954, and 232 plant expansions.

Fertilizer and Irrigation Team Up to Quadruple Forage Yield of Oat Pasture

COLLEGE STATION, TEXAS—Liberal use of fertilizers more than quadrupled forage yields of irrigated oat pasture in recent tests near Crystal City, in Zavala County, Texas.

A combination of 180 lb. nitrogen and 60 lb. phosphoric acid per acre increased oat yields to 5,650 lb. of air-dry forage per acre compared with 1,160 lb. without fertilizer, Carl S. Hoveland, agronomist at the Winter Garden Experiment Station, reported.

One-hundred twenty pounds of nitrogen alone increased yields to 4,450 lb.

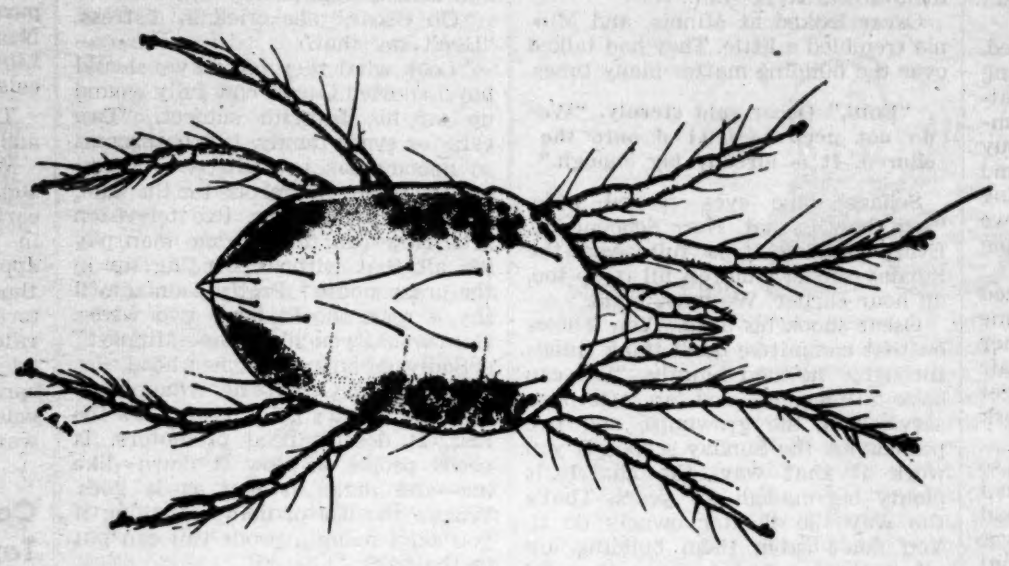
In addition to producing the most forage, the 180-60-0 application was the most profitable. On the basis of local hay prices, gross returns per acre were $84.75, while total costs ran $59.13—a net profit of $25.62 per acre. Net return for oats receiving 120-0-0 was $21.35 an acre, Mr. Hoveland reported.

Arkwin oats were seeded at rates of one and one-fourth bushels to the acre for the tests.

Mr. Dealer--Cut out this page for your bulletin board

BUG OF THE WEEK

SPIDER MITE



HOW TO IDENTIFY

The adult female spider mite is an eight-legged, pale-yellow or greenish mite, measuring only about 1/60th inch in length. The male is even smaller, being only about 1/80th of an inch long. Two dark spots, composed of the food contents, show through the transparent body wall. The body is oval in outline and sparsely covered with spines.

HABITS OF SPIDER MITE

After mating, female mites begin laying eggs at the rate of from 2 to 6 a day, each depositing a total of 70 or more eggs during her lifetime. Spider eggs are spherical, shiny and extremely minute, attached to the underside of the leaves, usually to the web which the mite spins wherever it goes over the plant. The eggs hatch in from 4 to 5 days into small, crawling young with only three pairs of legs. Female mites molt three times in the course of their growth, the males twice. A complete generation is produced every 20 to 40 days, but these overlap so that all stages of the mites may usually be found at any given time.

DAMAGE DONE BY SPIDER MITE

The mite pierces the leaf of the plant with two sharp slender lances attached to its mouth, and sucks the sap. Not only does the loss of sap damage the plant, but some entomologists believe that the plant is poisoned by the feeding insect. Many vegetable crops are damaged, but most serious injury is sustained by beans, corn, tomato, eggplant, celery and onion crops. Distribution of this pest is world-wide.

CONTROL OF SPIDER MITE

Application of control materials, whether by spraying or dusting, must be thorough in order to cover the underside of leaves. A common method of control is dusting of finely divided sulfur at 20-40 lb. an acre, or by spraying with wettable sulfur. Parathion and tetraethyl pyrophosphate are likewise effective. Some of the more effective treatments have been described as follows: Dusting with 0.5 to 1% parathion; or freshly-prepared 0.5% actual TEPP; or spraying with 15% wettable parathion at ¼ to ½ lb. to 100 gal. water; or with freshly-diluted TEPP at ¼ to ½ pt. of 20% concentrate to 100 gal. water. For control of mites in indoor areas, such as greenhouses, various aerosol applications of these materials has proved effective. In the latter cases, however, special safety measures must be observed.

Drawing of spider mite (greatly enlarged) furnished Croplife through Courtesy of U.S. Department of Agriculture, Washington, D.C.

Previous "Bug of the Week" features are being reprinted in attractive 24-page booklet, priced at 25¢ single copies; reduced rates in quantities. Write Croplife Reprint Dept., Box 67, Minneapolis 1, Minn.

When Oscar Schoenfeld, the portly, partly bald partner in the farm supplies firm of Schoenfeld and McGillicuddy, came home one night he was very crabby. It had been a busy day, and the heat and humidity had not helped conditions any.

"Ach, what a day!" Oscar moaned, entering the front door and stepping into the relative coolness of his neat-as-a-pin home. "Everybody waits until the last minute before they buy fertilizer, seeds and shrubs and plants. Then they want everything right away, and they growl cause we don't step fast enough. If people would only plan—"

"Oh, you poor man," sympathized Minnie, his wife, her black hair done up in a knot on the back of her head. "Sit down in your soft chair and I'll take off your shoes and get you a can of beer. I know you work awfully hard."

The couple had no children, and so Minnie lavished her maternal instinct upon pot-bellied Oscar. Her folks had come from Germany, and Minnie was brought up in the ancient belief that a woman should wait on her man hand and foot and administer constantly to his wishes and be obedient to his whims. She would never think of doing otherwise.

Now she knelt in front of him, unlaced his heavy oxfords, took them off, pulled the sticky edges of the socks away from the flesh and straightened a pants cuff. Then she hurried into the kitchen, took a can of beer from the icebox and opened it.

It was the cheapest kind of canned beer Oscar could find, and it tasted quite bitter, but Oscar always glowed as he drank it thinking of the 2¢ a can differential he saved.

Minnie gave him the beer, turned on his favorite news program, perfectly modulated the way he liked it, then asked timidly, "Oscar think we can afford to turn on the electric fan for you for a little while?"

Oscar frowned. "W-well, it will be all right while I listen to the news program."

So he sat, partially relaxed, sipping his bitter beer, the cool air from the little used fan cooling his body. In the kitchen, Minnie hurried with the pigs knuckle dinner, for her man must not be kept waiting. When the news program was over, the dinner must be ready for her lord and master. It was the code of her people, and to live up to the code that was honor and accomplishment.

After the meal, which included two pieces of delicious apple pie (made from canned apples, grown in the backyard) Oscar's frown was almost gone. He put on his oxfords again, and started to read the newspaper, when the doorbell rang.

"Minnie!" called Oscar from his easy chair. "Answer the doorbell."

"Yes, dear," Minnie dried her hands, and went from the kitchen to the front door.

The visitor proved to be lanky, grey haired Emil Schaus, a retired railroad conductor, and he belonged to the same church that Oscar did. He came into the living room rather apologetically and sat on the edge of the sofa.

"Herr Schoenfeld," began Emil hesitantly. "I am on the church building fund committee. I know you are not in favor of our building program, but I thought as a good Christian you might want to give a little towards it, yah?"

Oscar looked at Minnie, and Minnie trembled a little. They had talked over the building matter many times.

"Emil," Oscar said sternly. "We do not need to build onto the church. It is already big enough."

Schaus' blue eyes opened wide. "Ach, how is that, Herr Schoenfeld? Every Sunday it is full. And the Sunday school children fill it up too, an hour earlier. We must build."

Oscar shook his head. "You fellows on that committee don't think things through," he said bluntly. "We can have a morning and an afternoon service for the grownups, and two periods for the Sunday school. If you work it that way, the church is plenty big enough for years. That's the way the theater owners do it. You don't catch them building another theater just because they fill the house once or twice. No—they have shows every two hours. Churches can operate the same way."

Emil Schaus was stunned by the logic of Oscar's conclusion. "B—but that will make double the work for the pastor and the Sunday school teachers, and also the ushers!" he protested. "It isn't fair to them, is it?"

"It's cheaper than building onto the church," Oscar said relentlessly. "Let the pastor work a little harder. Let him preach in the afternoon instead of snoozin'. I tell you Emil, people are getting too soft nowadays. They think nothing of spending money right and left. They have forgotten how to cut down on expenses and save. We are headed for trouble—you wait and see."

"I don't know," Emil said dubiously.

"Well, I know," Oscar said emphatically. "How do you suppose that I saved my money, got my home paid for, got a bunch of bonds and a dandy savings account? Not by spending, I tell you. We save—Minnie and I. Oh, I know some people laugh at us for being stingy. Let them laugh. We don't put up a big front like some do, but we pay our bills, Emil. That's more than some people do. Minnie and I got the best credit in town. We don't owe a cent. There should be more people like us. Then Uncle Sam wouldn't be in such a spot as he is in."

"Spot?" echoed Emil.

"Why sure," thundered Oscar. "Look at the billions the government owes, and the millions in interest we have to pay. Look at all the people working for the government that don't do anything but sharpen pencils and then try to find their desks. Coolidge, now there was a president for you. He reduced the debt. They should have made him president for life."

"But—but—" said Emil, but Oscar broke in again.

"Everybody says 'let's buy this, let's buy that. We owe it to ourselves'. Bah—they never worry how they are going to pay for it. And, if business men don't watch their costs, they are going to get into that crazy spending habit, too. Like my partner, Pat. Only I hold him down. But after I'm gone—" He broke off and looked significantly at Minnie.

"Oh Oscar," she cried in distress. "Don't say that."

"Look what they tell us we should buy," snorted Oscar, now fully wound up on his favorite subject. "Two cars for every family, two bathrooms so nobody has to wait, two homes, one for the town and one for the lake, two and three radios, two television sets. How can the average man pay for all that without winding up in the crazy house? Pretty soon they'll say a man should have two wives. How would you like that—Minnie?"

Sadly, Minnie shook her head.

"You see," Oscar said triumphantly. "The world's going crazy. It's too fast. It doesn't need promotors. It needs people to slow it down—like me—and make it pay as it goes. What's the use of doing anything if you can't make a profit you can put in the bank."

Oscar paused for breath, and Emil Schaus took advantage of this opportunity to get to his feet. "Well," he said dejectedly, twisting his Panama in his hands. "I've got a lot of calls to make. I might as well get goin'."

The pudgy Oscar walked to the door with Emil. "Now, Emil," he said magnanimously. "Don't get the idea that I'm all stubborn, that I won't go along with the congregation. If you fellows are really going ahead with that addition to the church—after you have considered my objections—then I will contribute something."

"You will!" Emil Schaus could hardly believe his ears.

"Yes," said Oscar seriously. "Now you take that Gus Apfelbacher who farms out Honey Creek way. He owes my firm $126.75 for five months and we are havin' a heck of a time getting our money. If you can collect that money for us, I will donate $25 of it to the church. Maybe if Gus knows part of his bill will go to the church he will settle up."

"Oh!" said Emil, his enthusiasm waning. "I will have to take that matter up with the board of directors. You see, Herr Schoenfeld, nobody else has made us such a proposition like that. I—I don't know what to do about it on my own. Ach, such a complicated business, this church collection stuff."

C. M. Volkman & Co. Seed Plant Opens

WOODLAND, CAL.—The Woodland plant of C. M. Volkman & Co., seed dealers, was ready for full operation July 1, William Ramsey, company president has announced. In addition to the large seed stock for Sacramento Valley seed dealers, there is a seed cleaning operation for the ranchers.

Harry Kinder will be the new plant manager and has recently moved his family to Woodland. Plans for the formal opening have not been announced at this time but will probably take place the latter part of the summer, Mr. Ramsey said.

2,4-D Gets 98% Kill Of Rayless Goldenrod In New Mexico Test

STATE COLLEGE, N. M.—Rayless. goldenrod, a poisonous plant which kills hundreds of cattle on New Mexico ranges every year, can be easily and effectively controlled by the chemical weedkiller 2,4-D according to results of a demonstration recently completed at the Circle Bar Ranch at Bueyeros in Harding County, N. M.

Last summer, Norman Libby, owner of the ranch, set up 13 one-acre test plots on rangeland badly infested with rayless goldenrod. Then, with the help of Roy Fleming, Harding County agent, and the Department of Agricultural Services at New Mexico A & M College, Mr. Libby applied three different chemicals at different times.

The weedkillers were 2,4-D, MCP and 2,4,5-T.

When 2,4-D was applied in the summer, a 98% kill was effected by early fall. The same kill was found in the spring after 2,4-D had been applied in the preceding fall. Both the amine and the low volatile ester forms of 2,4-D were applied at the rate of 2 lb. (or 2 qt.) active material dissolved in enough water to spray an acre. A pint of kerosene was also added to each 10 gal. of water, to act as a spreader.

California Lowers Tax on Minerals

SACRAMENTO—Gov. Goodwin J. Knight approved a bill passed during the closing days of the California Legislature which reduces the tonnage license tax on agricultural minerals from 10¢ to 3¢ per ton.

The new reduced tax becomes effective Oct. 1, 1955, and continues in force until the 91st day after final adjournment of the 1957 session of the legislature.

It was proposed by the Assembly Committee on Manufacturing, Oil and Mining Industry that an interim committee give further study to this matter with a view to determining an equitable relationship between the tonnage tax on agricutlural minerals and commercial fertilizers.

FIELD NOTES

(Continued from page 9)

"Free Thinking" at the "cross roads" level and the year 1955 will prove no exception. This kind of thinking moves into the smaller towns from the country and then on to the larger towns and cities and that's food for any nation.

Back in our early birthday years, the country was "out of balance" economically. It was just about all agriculture. It had to be that way in the beginning. When farmers produced more than they could consume, business and industry started; then transportation.

We have the same number of acres that we started with, but the consumption of milk, butter, poultry, eggs, beef, pork, cotton, fruit, berries and tobacco will increase, and we wonder sometimes, "How in the world will we feed 200,000,000 people?" But we can do it and we will do it. I think this country could feed three to five hundred million souls.

Research, along with informed dealers and agricultural workers cooperating with highly informed farm people, can do the trick. Let's don't sell our country short. It is the best one in the world.

FARM SERVICE DATA
Extension Station Reports

Farmers who can produce wheat efficiently, are less dependent on a high price to make a fair profit margin. They make their profit because their production costs are lower. That was the statement of E. A. Barber, Purdue University soils specialist, in a report presented at a recent meeting of Midwestern agronomists.

Mr. Barber said that three factors have teamed up to increase wheat yields per acre, cut costs of production and boost profits.

He listed these as: 1—Development of higher yielding wheat varieties by state agricultural experiment stations; 2—increased rates of fertilization; 3—improved management practices.

The improved varieties of wheat, he said, are increasing the rates of fertilization farmers can use for maximum profit. These new varieties have higher potential top yields and respond to improved management practices.

★

Sugar beet root maggots have become a serious problem in north-central Colorado. Loss of stands in some Larimer and Weld County beet fields has caused some growers to replant their beet fields to corn. Damage and infestations were recently running as high as 20 maggots per sugar beet plant.

★

Proper fertilization of fruit trees will pay big dividends in larger crop volume and in better fruit size and quality, says the California Fertilizer Assn. Quoting a recent statement of M. E. McCollam, chairman of the association's Soil Improvement Committee, the association says that these desirable results follow the fertilizer-caused improvement in growth and leaf surface, and in vigor of fruit wood on the tree.

Mr. McCollam's statement warned, however, that long mismanagement or neglect of an orchard can result in ailments which cannot always be overcome by belated applications of plant food. He said that badly diseased trees or damaged root systems are poor subjects for fertilizer use.

Nitrogen has long produced responses on fruit trees, and is generally recommended throughout the west as an effective fertilizer. Mr. McCollam points out that the cheapest form of nitrogen is not always the most desirable for the individual orchardist. Long continued use of a single source of nitrogen can change the pH factor of the soil, and may sometimes cause water-penetration troubles. The average recommended application of nitrogen was given as about one pound of actual nitrogen per tree, with variations necessary in accordance with the type, age, size and condition of the tree.

Phosphorus seems to be available to many deciduous trees, which appear to take their needs from soils which show only small amounts of available phosphorus. Phosphorus applications are considered to be beneficial, though, in fertilizing cover crops grown in these orchards.

Mr. McCollam pointed out that phosphorus deficiency will increase as our orchard lands become older. Phosphorus deficiency has recently been recognized on lemon trees in some southern California groves, and substantial improvement in trees and fruit yield has resulted from heavy application of phosphorus fertilizer.

Potassium levels in many California soils have recently been found to be low, according to Mr. McCollam. This condition is usually accompanied by characteristic symptoms on the tree, such as smaller leaves, folded or curled leaves, browning or scorch at tips and along margins of leaves, dieback of branches, and reduced fruit size.

In cases of severe potassium deficiency it is often beneficial to apply 20 to 30 lb. of the proper type of potash fertilizer to each tree. Mr. McCollam pointed out that these massive applications usually supply enough potassium for five or more years, and cause rapid improvement to the affected trees.

★

A Colorado county agent thinks that sudan grass has been overlooked in the Great Plains. Primarily a summer pasture crop and adapted to large areas of the U. S., sudan grass provides an abundance of summer grazing, reports N. P. Davis of Cheyenne Wells.

Even though it was extremely dry in Cheyenne County in 1954, livestock men reported their cattle gained from 2-2½ lb. per day when they grazed one animal unit per acre for periods of two to three months.

★

The most ambitious program undertaken by the Tulelake Field Station of the University of California includes a fertilizer study.

The experiment station staff is closely watching tests of a chemical fertilizer confined in fused glass which disintegrates slowly to reach crops when needed.

Also on the agenda are trials with a new family of chemicals, chelates, for the feeding and speedier growth of plant life.

Still another project is the use of atomic radiation to develop a stiffer stemmed barley through seed treatment. During the past few years growers have reported trouble with weak stemmed barley which lodged after being planted in soils previously highly fertilized for potato crops.

★

Entomologists at the University of California are planning tests of pre-bloom nite control techniques in commercial pear orchards — techniques which have shown promise in experimental plots.

Harold F. Madsen, assistant entomologist in the California Experiment Station, has been testing a number of acaricides as pre-bloom treatments for the past two years. Of the materials tested, Ovotran and Genite 923 have shown the best results, according to a report of the researchers.

★

Alfalfa feeds heavily not only on phosphate, but on potash to a much greater extent, according to the California Fertilizer Assn., which reports that 6 tons of alfalfa consumes during its growing process about 280 lb. nitrogen, 70 lb. phosphoric acid and 270 lb. potash.

RINGING THE cash register
Merchandising Hints for The Retailer

Profit-Sharing Plan

One company which recently instituted a profit sharing plan uses the following set-up: Each employee who joins contributes from 2½% to 5% of his salary while the company puts in 5% or 10% of its profits, depending on the company's earnings. The principal aim of the plan is a retirement income for the employee beginning at age 65. However, if the employee leaves the company, his own contributions are returned with 3% compound interest. In addition, if the employee participates in the plan for more than three years, he will likewise receive part of the company's contributions. The plan works out so that an employee who has been a contributor for 10 years, on leaving the company, takes out his own contributions as well as 50% of the company's contribution. At the end of 20 years he receives 100% of the company's contribution to his credit. If an employee dies before retirement the plan provides for the return to his beneficiary of all his contributions, plus all the company's contributions credited to the member.

Use Gondolas Instead

Wooden railings set up to guide traffic are no longer advised for retail stores, says one store layout engineer. They take up too much valuable space, he says. "Dead-end" merchandise sections ought to be eliminated also; instead more use should be made of gondolas in the regular sales area. Don't have aisles that are too narrow, preventing a customer from walking by when another one has stopped to inspect merchandise.

Avoid a Costly Loss

Insurance is a complex field but dealers must be aware of at least the major provisions of their policies if they want to adequately protect their investment. A retailers' association recently conducted a survey on insurance among representative members. From the questions and replies, dealers can compare with their own situations to find their strong and weak provisions. Some of the questions and replies: Has your fire insurance kept pace with the current value of your building?—Yes 63, no 3. If you rent the store and have made improvements, does insurance cover your interest in these improvements?—Yes 43, no 9. If business was shut down because of a fire, would you still be required to pay rent?—Yes 26, no 43. Would expenses continue, even though income was cut off because of the fire?—Yes 47, no 26. Have you arranged for insurance to automatically adjust itself with the increase or decrease of inventory?—Yes 46, no 41. Would you have any difficulty collecting outstanding accounts, if records were destroyed by fire?—Yes 34, no 35. Are you protected if one of your employees should embezzle an amount of money?—Yes 30, no 49. Provided you have robbery, theft and larceny insurance to supplement a burglary policy, do you also have coverage for the loss of money?—Yes 56, no 23. Have you thought what would happen to your business if you took a sudden, unannounced vacation where you couldn't be reached for months or longer?—Yes 51, no 31. Do you have hospitalization and/or accident and health insurance for employees?—Yes 53, no 30. Do you have a pension program?—Yes 7, no 75. Is it desirable to have one?—Yes 32, no 36.

Dozen Ways To Save

There are a dozen or more phases in which management can tighten up and save money. These are ones which are usually regarded as not being too important and are therefore overlooked. How do you stand on: Cutting bank service charges; centralizing paper work; taking full advantage of cooperative advertising in newspapers, on radio and TV; tying advertising to industry promotions; measuring warehouse and transportation performance; investigation of utility rates, cutting insurance costs by loss prevention; reducing printing costs; reducing duplicating costs; efficient materials and merchandise handling; keeping a fool-proof recorder system; controlling cashier losses, and reducing bagging and wrapping costs.

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Firman E. Bear

Covers in detail: soil chemicals, important soil elements such as nitrogen, phosphorus, calcium; yield prospects of crop plants, moisture control, soil management; mechanical operations; soil conservation; organic matter maintenance. New facts, accurate figures. 66 illustrations, 420 pages $6.00

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C. E. Millar, Professor Emeritus of Soil Science, Michigan State College.

A fundamental treatment of the principles of fertility in the soil, with major emphasis on the plant itself. Relevant aspects of soil chemistry, soil physics, soil microbiology and plant physiology from viewpoint of their influence on plant growth. Each major plant food element and the more important micro-nutrients fully treated with respect to supply in the soil, sources and amounts of additions, losses from the soil, functions in plant growth and plant symptoms of deficiency. Covers all sections, with considerable space to saline soils and soils of southern latitudes $6.75

CHEMISTRY OF THE SOIL (1955) *Firman E. Bear*

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SOILS AND SOIL MANAGEMENT *A. F. Gustafson*

A complete study of soils; physical properties, soil organisms, organic matter, relation of water, control of water, tillage, erosion, acidity and its control by liming, management of alkali soils, nitrogen and its importance to the farmer, production, conservation and utilization of farm manures, production and utilization of green manure crops; fertilizer materials and their effects on soils; crop rotations; fertilization and long-term maintenance of productivity of mineral soils. Published 1941. 424 pages, illustrated $6.00

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D. W. Thorne and H. B. Peterson, Department of Agronomy, Utah State Agricultural College. Dr. Thorne is also Chief of Soils and Fertilizer Research Branch, Tennessee Valley Authority.

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The theme of the book is the necessity of chemical fertilizers to maintain the fertility of the soil. It has concise information on which soil conditions and which chemical fertilizers are most suited for special crops and vegetables. Space is devoted to cereal crops, barley, wheat, oats and rye; to roots and tubers, sugar beets, potatoes, carrots, parsnips and turnips; to vegetable crops, beans, peas, alfalfa, lupines; to grasses and clovers; to onions, flax, kale, cabbages, lettuce, tomatoes, celery, cauliflower and fruits. It clarifies the relationship of manures, compost and chemicals as fertilizers and points out how chemicals should be used to obtain the best results. Its philosophical soundness and logic should do much to avert the confusion of thought introduced by the advocates of compost and manure as against the use of chemical fertilizers $8.50

SOIL SCIENCE SIMPLIFIED *Helmut Kohnke*

A concise textbook dealing with basic concepts of soils. Much useful information for students in agriculture, farmers, fertilizer salesmen, etc. 68 pages, paper bound $1.00

MANUAL ON FERTILIZER MANUFACTURE—Second Edition *Vincent Sauchelli*

Available Oct. 1, 1954. A complete up-to-date revision of this well known book, that reviews in simple, everyday language the processes of manufacture of superphosphates, of ammoniation, and the formulation and preparation of mixed fertilizers. Indispensable to fertilizer plant supervisors and operators, and a valuable aid to research men and teachers. New chapters added: on plant nutrition, mixed fertilizers, ammoniation, granulation, revised and brought up-to-date. 80 tables of practical information $4.50

COMMERCIAL FERTILIZERS, Their Sources and Use—Fifth Edition (1955) *Gilbeart H. Collings*

Based upon the author's practical experience as an experiment station agronomist and teacher, and incorporating information on recent developments by agronomists, chemists, engineers and fertilizer manufacturers. Authoritative on problems concerning commercial fertilizers and their use in gaining larger yields. 160 illustrations, 523 pages $8.00

USING COMMERCIAL FERTILIZER (1952)

Malcolm H. McVickar

Dr. McVickar is chief agronomist of the National Fertilizer Association. The book deals specifically with commercial fertilizer, how it is produced and how to use it. It is non-technical. It includes chapters on how to measure fertility of soils, secondary and trade-element plant foods. 208 pages, 106 illustrations, cloth bound $3.00

HUNGER SIGNS IN CROPS—Second Edition

A symposium—published jointly by the American Society of Agronomy and the National Fertilizer Association.

A comprehensive study of nutrient-deficiency symptoms in crops compiled by 19 of the leading authorities in the field. It is being widely used by college professors, research and extension specialists, industrial chemists and agronomists, county agents, and teachers of vocational agriculture. Many farmers have found it of particular value in planning their fertilizer programs. Cloth bound, 390 pages, 242 illustrations, including 124 in full color $4.50

MANURES AND FERTILIZERS

A survey by the Ministry of Agriculture and Fisheries, dealing with soil analysis, inorganic fertilizers, waste organic substances and principles of manuring. In language to give the farmer basic principles of increasing soil fertility by the application of natural organic manures and synthetic inorganic fertilizers. Many important tables on quantitative data $2.50

PLANT REGULATORS IN AGRICULTURE

Dr. Harold B. Tukey

Published September, 1954. A textbook giving background material for county agents, farmers, citrus growers, nurserymen, gardeners; providing fundamentals and general principles; covers encouragement of roots by plant regulators, control of flowering and fruit setting, parthenocarpy, abscission, prevention of preharvest fruit drop, delaying foliation and blossoming, maturing and ripening, inhibition of sprouting and weed control. Brings together specialized knowledge of seventeen authorities in the field, with two chapters written by Dr. Tukey, head of department of horticulture at Michigan State College. 289 pages $5.50

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INSECT, FUNGUS AND WEED CONTROL

Dr. E. R. de Ong

The information is grouped according to field of application rather than to chemical composition or nomenclature. Chapters on insecticide label, seed disinfectants, herbicides, forest insects and diseases, livestock insects, and the pests found in household and industry. Fumigation of warehouses, residual sprays and preservatives for fruits, vegetables and wood products are covered. An up-to-date guide on pest control with the needs of operators, agricultural and structural specialists carefully considered. Shippers and warehouse personnel will find the book useful $10.00

THE CHEMISTRY AND ACTION OF INSECTICIDES

Harold H. Shepard, Entomologist, U.S. Department of Agriculture, formerly Associate Professor of Insect Toxicology, Cornell University.

Treats the chemistry of insecticides, the history of their use, their commercial importance here and abroad, the nature of the major uses, the influence of environment on effectiveness. Materials are arranged according to their chemical relationships. Two chapters relating to organic compounds largely new as insecticides. Illustrative data in form of tables, and a convenient appendix of equivalents arranged for practical use in the field. 504 pages $7.00

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CHEMICAL BUSINESS HANDBOOK *Dr. John H. Perry*

1,300 double column pages, the equivalent of several average books; 700 illustrations, by 124 contributors. Market research data section is 280 pages, business mathematics 200 pages, financial and accounting 142 pages, research and development 150 pages, sales and advertising 92 pages, twenty sections in all. The book deals with chemical management problems and is useful to technical men, engineers and executives, in the chemical and allied fields. Dr. Perry is editor of the Chemical Engineers Handbook, a companion publication $17.00

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lean Grain Meeting et for July 8 Washington

WASHINGTON—C. M. Ferguson, dministrator of the Federal Exten- on Service has announced that a eeting for all segments of the ain trade, and government and ucational agencies interested in e production and marketing of ean grain will be held in Washing- n July 8.

The purpose of the meeting is to etter acquaint producer, handler d processor groups with the clean ain educational programs now be- g carried out by state extension rvices and the USDA, and to study ays of increasing the effectiveness these programs.

Representatives of the USDA, ealth, Education, and Welfare De- artment, Interior Department, state xtension services, producers, untry elevator operators, railroads, illers, bakers and other groups will articipate in the meeting.

Mr. Ferguson, said the efforts by veryone concerned with the $250 illion annual loss of stored grains om insect and rodent damage must e intensified if the loss is to be ermanently reduced.

enneth Conwell o Head Houston ffice for Monsanto

ST. LOUIS—The appointment of enneth Conwell as district manager r the Houston office of Monsanto hemical Co.'s Organic Chemicals Di- ision, was announced here recently J. L. Hammer, divisional director marketing.

Mr. Conwell, who has been assistant istrict manager at Houston, will re- lace Harvey M. Harker, who will etire July 1 after 29 years' service ith Monsanto.

Mr. Conwell joined Monsanto in 940 after receiving a B.S. degree in hemical engineering from Kansas tate College. He has been in the les organization of the Organic hemicals Division since 1945, when e was assigned to the Chicago office. n 1949 he was transferred to the ew York office and in 1954 he was ransferred to the Wilmington, Del., ffice. He was appointed assistant dis- rict manager at Houston on January this year.

Mr. Harker joined Monsanto in 926 as a purchasing agent. In 1940 e was on special assignment with onsanto's Australian subsidiary. rom 1942 to 1944 he was with the ar Production Board as chief of the ntermediate chemicals section. He pened the Houston district office in 947.

gricultural Boom redicted for orthwest Mexico

JUAREZ, MEXICO, D.F.—Plans or the completion of a large gas ain line to carry fuel from the eynosa field to Monterrey and other exican cities are now in the final tages.

By getting a plentiful supply of eap fuel, authorities are predict- ng that the Northwestern area of e republic will experience a boom industry and agriculture.

The area already has many natural esources, including lumber, minerals nd other raw materials. Agriculture making progress, but will be in a osition to make greater strides when atural gas comes to the area.

SOCIETY TO MEET

NEW BRUNSWICK—Research in uits and vegetables at the Agri- ultural Experiment Station, Rutgers niversity, will be on display for the mmer meeting of the New Jersey orticultural Society July 16.

WHEAT VOTE

(Continued from page 1)

but lower quality wheats may not find the incentive to make cash disbursements for plant foods.

If such a plan were to be adopted, on the other hand, it might cause a shift away from the high yielding varieties to better seed and consequently those producers may open a wider sales gate for materials from the chemical industry.

It may be mentioned in passing that the varietal discount and premium plan is not meeting with much favor in congressional circles. It is expected that leaders in Congress may suggest that USDA refrain from using this authority and confine its loan policy changes to a broadening of its definition of the non-commercial wheat area. This would exclude more land from the commercial wheat belt and at the same time grant USDA authority to exempt farmers growing wheat for seed and feed use on their own farms from acreage allotments and marketing controls. In both of these latter instances congressional action would be necessary.

Another approach of USDA may be made through the encouragement of farmer shifts from wheat and other field crops to hay and pasture land. Mr. Benson says that such a program is now being developed for the Great Plains states, but details are not currently available.

The magnitude of such a program may, however, be measured against previous speeches by the secretary and his aides who have expressed the opinion that as much as 35 million acres should be removed from field crop cultivation and returned to pasture, hay or grazing or woodland.

There is little if any talk here now of cross-compliance as a standard of eligibility for price supports on any crop. Such cross-compliance would impose the requirement that to be eligible for price support a producer must comply with acreage allotments for all crops thereby halting a switch into small grain production on lands taken out of production of wheat or cotton or corn.

It is clearly known now that wheat farmers have been moving into other crop cultivation, where possible, on land taken out of wheat acreage because of the acreage restrictions.

VOTING BY STATES

State—	Vote For	Vote Against	Total Vote	% For
Ark.	255	39	294	86.7
Cal.	667	420	1,087	61.4
Colo.	5,940	2,245	8,185	72.6
Del.	166	49	215	77.2
Georgia	497	49	546	91.0
Idaho	5,611	1,721	7,332	76.5
Ill.	8,040	5,616	13,656	58.9
Ind.	6,508	4,449	10,957	59.4
Iowa	1,027	233	1,260	81.5
Kansas	39,035	14,106	53,141	73.5
Ky.	1,821	148	1,969	92.5
Md.	543	409	952	57.0
Mich.	3,994	3,711	7,705	51.8
Minn.	10,191	439	10,630	95.8
Mo.	7,072	4,776	11,848	59.7
Mont.	13,409	1,973	15,382	87.2
Neb.	15,189	8,766	23,955	63.4
N. J.	117	78	195	60.0
N. M.	687	229	916	75.0
N. Y.	862	1,114	1,976	43.6
N. C.	1,145	148	1,293	88.6
N. D.	66,817	2,948	69,765	95.8
Ohio	5,707	7,015	12,722	44.9
Okla.	13,494	3,771	17,265	78.2
Oregon	2,592	900	3,492	74.2
Pa.	655	1,391	2,046	32.0
S. C.	1,121	65	1,186	94.5
S. D.	18,904	1,339	20,243	93.4
Tenn.	729	195	924	78.9
Texas	10,953	1,671	12,624	86.8
Utah	695	471	1,166	59.6
Va.	696	246	942	73.9
Wash.	8,012	2,629	10,641	75.3
W. Va.	44	78	122	36.1
Wis.	52	25	77	67.5
Wyo.	950	390	1,340	70.9
U.S.	254,197	73,852	328,049	77.5

YELLOW CLOVER APHID

TUCSON, ARIZ.—The yellow clover aphid is the number one alfalfa insect problem in Arizona.

Negotiations Started For Merger of Hooker, Niagara Chemical

NIAGARA FALLS, N.Y.—Hooker Electrochemical Co. and Niagara Alkali Co. announced June 28 that negotiations were in progress for merger of Niagara into Hooker.

A stockholders' meeting will be called this fall to vote on the proposal if directors of both companies agree in current talks.

Under the plan, Niagara shareholders will receive approximately 1½ shares of Hooker stock for each share of Niagara stock. The transaction has been estimated at about $40 million based on current market prices.

Hooker has plants at Niagara Falls; Tacoma, Wash., and Montague, Mich.

Hooker has assets estimated at $86 million after absorbing the Durez Plastics and Chemicals Co., Inc., earlier this year. Sales by Hooker in 1954 were $44 million with net profit equaling $1.20 per share.

Niagara had total assets of $12 million at the end of 1954. Sales for last year are undisclosed, but net profit was more than $1.8 millin and equal to $3.15 per share.

Bureau of Chemistry Moves in California

SACRAMENTO, CAL.—The office of the California State Bureau of Chemistry has been moved to the third floor of the Agricultural Building Annex, 1215 O St., Sacramento, according to information received from Allen B. Lemmon, chief of the bureau. The old location was in the State Office Building.

Mr. Lemmon states, however, that all mail should be addressed to 1220 N. St.

Consolidated Plans New $2 Million Sulfuric Acid Plant

SAN FRANCISCO—Consolidated Chemical Industries, Inc., will build a large contact sulphuric acid plant at Le Moyne, Ala., according to a recent announcement by G. L. Bond, president of the company. Construction will get under way at once and completion is expected by mid-1956.

This sulphuric acid plant will cost $2,000,000 and will be located adjacent to Courtauld's (Ala.), Ltd., viscose rayon works.

Consolidated Chemical Industries, Inc., operates 10 sulfuric plants in the U.S. and three in the Argentine. Eight of the 10 American plants are located in the Southwest. In addition to sulphuric acid, Consolidated manufactures aluminum sulphate, muriatic acid, potassium sulphate, animal charcoal and animal glues.

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Reprints of Croplife's Feature

Bug of the Week

Twenty four of the insects described in Croplife's weekly feature, "Bug of the Week," have been reprinted into an attractive 8½ x 11 inch booklet for distribution to the trade. The price is 25c each in quantities up to 100; 20c each in quantities of 100-1,000, and 15c each in quantities over 1,000. Firms may have their names imprinted on the back cover at a moderate extra charge.

Included in the booklet are the following insects:

Alfalfa Weevil
Armyworm
Boll Weevil
Chinch Bug
Cotton Bollworm
Cutworm
Grasshopper
Imported Fire Ant
Lawn Chinch Bug
Lygus Bug
Meadow Spittlebug
Mosquito
Northern Corn Rootworm
Onion Thrip
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WORLD REPORT

By GEORGE E. SWARBRECK
Croplife Canadian and Overseas Editor

Are fertilizer distributing devices all that could be desired? Do they meet the needs of farmers? These questions are being asked in Ontario, Canada, by the province's fertilizer advisory board and a special committee has been appointed to study the situation.

The use of fertilizers is growing; new practices bring new problems and it is the committee's job to find answers to those problems. Farmers are busy making suggestions. One man suggested that the fertilizer box is placed too high on the machine. He explained that by lowering it about a foot, he achieved better results.

Other farmers suggested that the box should be made considerably larger because more plant food is being applied to the acre than in the old days when fertilization was not accepted practice on most farms. Moreover, the advantages of mechanization have led some farmers to extend the size of their fields by removing fences and hedges. It is felt that if the box could be made larger the necessity of refilling half way across the field could be avoided.

Many farmers complain about the time lost in cleaning the fertilizer drill after use. They suggest two remedies — the distributing device should be simplified and made easily detachable, and non-corrodible metals should be used on the moving parts of the machines.

The committee appointed by the fertilizer board proposes to bring together farm engineering experts in the various government services and representatives of the machinery companies, along with soils specialists and agronomists, in an endeaver to work out the desired improvements.

South African Plant

Officials of African Explosive and Chemical Industries, Ltd., say that in veiw of the continually growing demands for nitrogen by industry and agriculture in South Africa, the company is planning substantial expansions to its ammonia capacity.

A new ammonia plant is now under construction at Modderfontein and the first stage is already in production. The second and third stages are still under construction and provision has been made for the necessary expansion, the officials add.

New Suez Plant

The fertilizer plant, now under construction in the Suez Canal area, is expected to be in production before the end of 1955. Rated capacity is 250,000 tons fertilizer a year. Currently imports of nitrate are in the region of 550,000 tons a year and it is hoped that a proposed factory at Assuan will be able to fill the gap. Tenders have been called for the construction of this plant.

Antibiotics

Research undertaken in Canada has proven that stem rust in wheat can be controlled on an experimental basis by the use of antibiotics. However, reports by members of the Canadian government's botany and plant pathology laboratory in Ottawa indicate that the system does not have any commercial application at the present time.

Out of several antibiotics tested under greenhouse conditions, Actidione showed promise and this was selected for field trials. This antibiotic appeared to have possibilities under both conditions. The officials point out, however, that all concentrations were purely experimental, and the quantity and strength of the spray applied may have been considerably more than was necessary. Yields of sprayed plots were consistently greater than those of unsprayed plots, the report adds.

Infestation Research

The annual report of the British Pest Infestation Research Board reveals some of the work done recently in both Britain and in Commonwealth countries on the disinfestation and protection of grain held in bulk storage. Little information exists on the effects of insecticides and fumigants on stored products, the board comments.

The biochemistry section of the board has been carrying out work on the problem in association with other scientific establishments.

One project involved making an appraisal of the effects of fumigating wheat with methyl bromide. The report says that as a result of eating fumigated wheat or flour products, traces of nine or ten substances would be absorbed in the body. However, at its highest, the amount could not exceed 175 mg. a week.

Many of the compounds have been fed or injected into mammals at rates much higher than any likely to result from fumigation practice, without harmful results. Some of them are established natural constituents of the common diet.

The report adds that methyl bromide at concentrations used in fumigation does not destroy such essential food substances as amino-acids and certain B vitamins.

Canadian Weeds

The farmers of Western Canada are having weed trouble. Recently the land was too wet to allow spraying work but with drier conditions, the work is now getting under way.

Prof. Shebeski of the University of Manitoba has conducted some research into the effect on crop yields of growing weeds and has come up with some astonishing figures. He says that 100 mustard plants in a square yard can reduce wheat yield from 47.1 bu. an acre to 18. Significant decreases in wheat were caused by 50 plants to the square yard and only 10 mustard plants to the square yard reduced flax yields from 17.7 to 8.1 bu. an acre.

These, Prof. Shebeski points out, are mild infestations and not usually considered sufficient to warrant treatment with 2,4-D. Treatment in Canada costs approximately 50¢ an acre. As high as 13 million acres a year are treated in Canada, yet weeds, he states, still cost the farmers an estimated $400 million annually.

SOUTH DAKOTA FIELD DAY

BROOKINGS, S.D. — The South Dakota State College Agronomy Field Day will be held at the Agronomy Farm near here July 7.

Plans Progress For New CIL Ammonia Plant

MONTREAL—Canadian Industries (1954) Ltd., announces that negotiations covering the design and construction of the process area of the proposed new anhydrous ammonia plant at Millhaven, Ont., are now proceeding with the Girdler Corp. of Canada, Ltd., and are expected to be completed in the near future. (Croplife, June 27, page 1.)

The remaining portion of the new plant will be handled by CIL's own engineers with construction work farmed out to general contractors.

The company states that the ammonia plant — estimated to cost $9 million — will bring to Canada a patented new process involving the partial oxidation of fuel oil under pressure. This process, which uses a heavy residual oil as starting material, was recently developed.

It is now being incorporated in a U. S. plant for the first time, that of Northern Chemical Industries, Inc. at Searsport, Me. This project is being engineered and built by the Girdler Co., specialists in processes involved in the synthesis of ammonia.

The extension of facilities at Beloeil, Que., to manufacture ammonia solutions for agriculture using ammonia from the Millhaven plant, will be carried out by plant personnel, CIL states.

Ammonium Sulfate, Superphosphate Output Rises in Australia

SYDNEY—The production of ammonium sulfate and superphosphate in Australia for the six months ended Feb. 28, 1955, was a record, according to trade reports. The general trend is in the direction of increased consumption for both items.

Australia is able to meet the whole of the requirement for superphosphate from local production sources, but large amounts of ammonium sulfate have to be imported. In the 10 months ended April 30, 1955 importations totaled 36,000 tons, against 11,000 tons in the full year 1953-54 and only 400 tons in 1952-53. However, in 1951-52 imports hit a peak of 41,000 tons.

There are seven producers of ammonium sulfate in Australia, four of them owned by the government. A new plant has been erected by the Electrolytic Zinc Co., Ltd., at Risdon, Tasmania, but it is not yet in production due to the unavailability of electric power. When the plant is operating it is expected to cover the gap between requirements and production, thus cutting back, if not entirely excluding, the need for imported supplies.

Superphosphate plants number 20 and some new facilities have recently come into use.

Fly-by-Nighters

SALT LAKE CITY— Harold Bell, district agriculture inspector for the Utah Department of Agriculture, reports that unlicensed "fly-by-night" spray operators are working in the area. He said there is evidence that some have sprayed home gardens and landscape with nothing but water. Others have used pesticides improperly, causing illness to residents and death to pets, he said. Mr. Bell warned residents against hiring unlicensed operators.

BEST WHEAT

MANHATTAN, KANSAS — Kiowa wheat has made the best average yield during the last six years at the Kansas State College branch experiment station in Colby, it was announced recently at the station. The average yield of Kiowa is 37.5 bu.

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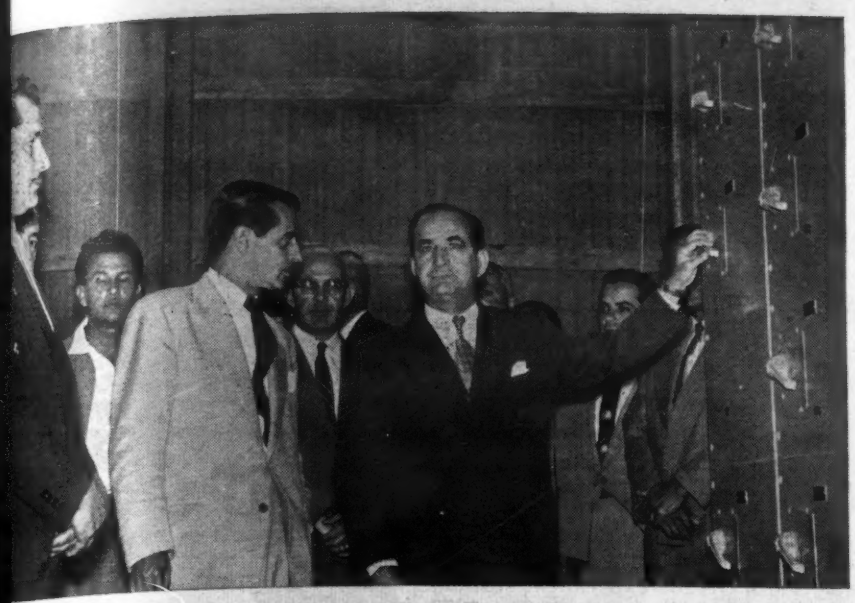

PRESIDENT THROWS SWITCH—Costa Rican President José Figueres is shown throwing the switch to officially start production of insecticides in the new Quimagra plant at San Antonio de Belén. Officials watching are Antonio Cappella, officer of Quimagra; Bruce Masis, minister of agriculture and industry and Joseph P. McKenna, engineer in charge of plant construction.

Production of Insecticides Under Way At New Quimagra Plant in Costa Rica

SAN ANTONIO DE BELEN, COSTA RICA—The new insecticide plant of Quimicas Agricolas Centroamericanas, Ltda. has been put in operation here for the production of insecticides containing chlordane, DDT, BHC, toxaphene, aldrin, dieldrin and heptachlor. Special formulations following the recommendations of the agricultural departments of each Central American country will be manufactured, according to the firm.

The plant was dedicated only recently, with José Figueres, president of Costa Rica, throwing the switch which started the plant in operation. C. J. Fredrickson, formerly export manager of John Powell & Co., New York, is chief operating executive of Quimagra. Erection of the plant and installation of equipment were under the supervision of Joseph P. McKenna.

According to information from the company, the new plant will process from 25-35 technical concentrates which will be sold under the Quimagra label throughout Central America. A majority of the purchases of technical material will be made in the U.S.

A Raymond roller mill, the only one of its kind in Central America, produces fine powders, 99% of which pass through a 325-mesh screen. Use of this type of mill, Quimagra officials state, enables the plant to utilize various diluents and to handle a wide variety of materials.

Channing J. Fredrickson

OPERATES COSTA RICAN PLANT—C. J. Fredrickson, formerly of John Powell & Co., New York, is now chief operating executive of the new plant of Quimicas Agricolas Centroamericanas, San Antonio de Belen, Costa Rica.

Basic Crop Acreage Drops in California

SACRAMENTO—A substantial decrease in the combined acreages of allotment crops in California—cotton, wheat, rice and sugar beets—is noted in California this year as compared to 1954, George Scott, chief of the Federal-State Crop Reporting Service, told the California Board of Agriculture.

In addition, Mr. Scott said the farmers of California apparently have planted about 200,000 acres less to barley this year and about 16,000 acres less to oats. The total reduction in acreage due to these cutbacks is offset to some extent by prospective greater plantings of corn, sorghums, alfalfa, potatoes, flax, tomatoes and a few other crops.

HORTICULTURIST ASSIGNED

PULLMAN, WASH.—The Extension Service of Washington State College is assigning John C. Dodge, currently extension program supervisor, to work with research workers and county agents in western Washington.

Washington State College Research Grants Listed

PULLMAN, WASH.—Grants from industry totaling over $15,000 have been received by Washington State College Agricultural Experiment Stations since the first of the year, Dr. M. T. Buchanan, research director, reports. Grants in the farm chemical field are listed below.

The agronomy department, main station, Pullman, has received $3,000 from Crown-Zellerbach Corp., Camas, Wash., for a second-year evaluation of a soil stabilizer.

Plant pathology, horticulture and entomology at the Tree Fruit Station, Wenatchee, have received $1,000 from Pacific Coast Borax Co., Los Angeles, for exploration of compatibility of polybor with other insecticides and fungicides.

California Spray Chemical Corp., Richmond, Cal., renewed a $1,000 grant for fungicide control of seed diseases of Washington crops, to go to plant pathology, Pullman.

Velsicol Corp., Chicago, renewed a $600 grant to the entomology department for evaluation of chemicals at the Puyallup, Mount Vernon and Prosser stations.

The American Cyanamid Co., New York, renewed its $800 grant to agronomy at the Western Washington Experiment Station.

Gloomicides

The woman tourist posed for a snapshot in front of the fallen pillars of an ancient temple in Greece. "Don't get the car in the picture," she warned, "or my husband will think I ran into the place."

★

First Girl: "How do you make love?"

Second Girl: "You don't. You just stand still and defend yourself."

★

The reason why psychiatrists make so much money is quite simple. There ain't a woman alive who won't pay to talk incessantly for a couple of hours.

★

Three small boys were gathered on a curb. Two were engaged in typical extrovert activities. A third sat reading an issue of "Esquire."

A kindly old man, approaching the group, paused to ask what occupations the lads wished to follow when they grew up. (There are always kindly old men, it seems, to ask these foolish questions.)

One boy promptly responded that he wanted to be an airplane pilot. Another chose the life of a fireman. The third boy looked up from his magazine and blurted: "Aw, heck, I just want to grow up!"

★

A bow to our loyal postoffice employees. Neither storm nor dark of night nor the Christmas spirit kept them from rushing the income tax blanks to our doors.

A man, upon arrival of a new heir in his household, placed two cigar boxes on his desk. The one box was full of cigars, and bore a hand-printed sign reading: "It's a Boy! Help yourself!" The next cigar box was empty. The accompanying sign read: "It's the 6th one. Help me! All donations gratefully received."

★

The proprietor of a local art gallery, showing pictures to a customer who didn't know what he liked, tried out a landscape, a still life, a portrait, and a floral piece, all without results. "Would you be interested in a nude?" he asked. "Good heavens, no," said his visitor, "I'm a physician."

★

Several lads were seated in a bistro having a few glasses the other night. Every half hour one of them would glance at a hard-looking blonde seated at the bar. Then he'd turn back to the rest of the boys and tell them, "Not yet."

"What's with this 'Not Yet' business?" the bartender asked.

"Well," explained one of our heroes, "as soon as that old bag starts to look beautiful we know we've had enough."

★

A dog seized a joint of meat while his owner was in the butcher shop.

"Is that your dog?" asked the butcher angrily.

"It was," replied the man. "But he's keeping himself now."

★

"Thankful," grumbled the sourpuss to the sunshine spreader. "What have I got to be thankful for? Why I can't even pay my bills."

"In that case," prompted the other, "be thankful that you aren't one of your creditors."

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PACIFIC BRANCH ESA

(Continued from page 1)

tural chemicals, in turn, should result in a more abundant and economical food supply."

The increasing complexities in the development of new insecticides were described by another invitational speaker, J. F. Kagy, agricultural research director for Dow Chemical company and a retiring member of the society's executive committee.

He pointed out that each growing locality has its own special crop problems which effect insect control, a condition which often results in "rather frustrating difficulties" for the chemical industry. He added that he is optimistic enough, however, to think the industry will keep pace by perfecting more rapid techniques and procedures for obtaining information.

Subsequent reports on control of the nation's newest insect pests, the Khapra beetle and the yellow clover aphid, appeared to bear out this optimism. Federal, state and university scientists participated in special symposia on the two insects, and all expressed encouragement by recent developments.

W. L. Popham, chief of the USDA plant pest conrol branch in Washington, D. C., claimed that Khapra beetle control has become merely a "problem of locating the insect and destroying it." Sixteen states have been carefully searched for the pest, he said, but infestations have been found only in California, Arizona and New Mexico.

He warned, however, that the beetle is a "hitchhiker of the first order, so a vigorous program of inspection is still in order." He listed as urgent the following needs:

1. Effective methods of preventing spread of the pest, a problem complicated by modern transportation systems.
2. Alternate treatments, especially one short of overall fumigation.
3. Improve sanitary conditions in warehouses and processing plants to prevent recurrences of the "astounding spread" of the Khapra beetle.

H. M. Armitage, chief of the California Department of Agriculture's Bureau of Entomology, described the emergency steps taken following the pest's discovery in a Tulare (Cal.) warehouse in November, 1953, pointing out that there was little or no information to serve as a guide in developing effective eradication measures.

"It was early found, by trial and error, that contact or space sprays were of little value in eradication, no matter how effective the chemical used might be. It was impossible to reach all of the larvae in the incredibly small building crevices in which they hide themselves.

"Also, their ability to hide out under such conditions for periods up to three years and in bridging periods of adverse temperature or host conditions completely minimized any residual value such chemicals might have," he continued.

The use of a highly volatile, penetrating fumigant proved the only effective means of eradication, although conventional fumigation was ruled out by the presence of larvae on the outside as well as the inside of infested buildings. Relatively high dosages of methyl bromide for unusually long periods of exposure with the entire structure under a gas-tight covering were necessary, he said.

Expense of this treatment stresses the importance of correct identification, according to H. H. Kiefer of the same bureau, who termed the job "one for an expert with a microscope." His department has been swamped with specimens of suspected Khapra beetles, he said.

Identification is also a key phase of the current yellow clover aphid project, with none of the panel participants claiming to know for sure whether the pest now spreading through the southwest is the true yellow clover aphid. Since it seems to prefer alfalfa, Robert C. Dickson of the University of California at Riverside suggested it be called the "spotted alfalfa aphid."

Believed to be a native of India, the rapidly-reproducing insect was apparently introduced into New Mexico in 1948. It was not recognized as a pest, however, until it suddenly appeared in Arizona in 1954. Since then, it has been reported in southern California, Nevada, Colorado, Oklahoma, Texas, Kansas and Louisiana.

Growers in Arizona found their third and fourth cuttings of alfalfa hay woudn't go through the bailer because of the sticky honeydew deposited by the aphid, according to D. M. Tuttle of the University of Arizona. Control has been gained with phosphate insecticides, although reinfestation continues to be rapid. Protection of alfalfa seedlings by soaking seed in systemic solutions is now being sought, he reported.

Similar results have been gained in California by Harold T. Reynolds of the University of California at Riverside, who claimed that improved timing of applications enabled growers to prevent damage with one-fourth the treatments originally required. He also is experimenting with systemics, partially to protect honey bees that are attracted to infested fields by the honeydew.

The surges of heavy insect populations that marked the aphid's first appearance in California have leveled off to a point where natural enemies have eliminated the necessity for use of insecticides in certain areas, he said. Owen Smith reported that the University of California has imported five aphid parasites from the midwest, the Orient and Italy for tests under local conditions.

Resistant varieties of alfalfa are also being sought, and W. L. Howe of the USDA entomology research branch at Anaheim (Cal.) told the meeting that the Lahontan variety developed in Nevada by Oliver F. Smith is a "striking case of insect resistance." It is particularly adapted to cooler areas, which would prove useful if the pest should spread northward, he pointed out.

Current research on aircraft spraying was reported in a symposium conducted by Kenneth Messenger of the USDA aircraft and special equipment center at Beltsville, Md., who said that 5,000 aircraft are now used in spraying and dusting, compared to some 200 before World War II.

He estimated that nearly three million acres of forest and range land will be covered by planes this summer, most of it on a cooperative basis wth federal, state and sometimes private participation.

Edgar A. Smith of the Santa Clara county (Cal.) health department warned his fellow entomologists that fly control can become prohibitively expensive if unnecessary delays occur in the disposal of organic wastes by canneries, packing plants and livestock ranches. He claimed resultant problems can be solved only by changes in management practices and described the division of vector control recently established in his department to develop a program of cooperation among farmers, public health officials, law enforcement agencies and the public.

A new use for live viruses was reported by Irvin Hall of the University of California at Riverside, who has controlled cabbage looper on lettuce with a water suspension spray containing viruses from diseased larvae of the same pest. The disease seems to reach epidemic proportions naturally only when the looper is feeding on cotton, but 12 gallons of the virus-laden solution applied to an acre of lettuce soon induces an effective epidemic, Mr. Hall declared.

Nearly 100 research reports were delivered during the three-day session at the famed Mission Inn in Riverside. The attendance of 404 broke all records for the 39-year-old organization.

Walter Carter of the Pineapple Research Institute in Honolulu succeeded John Steinweden, regional coordinator for the California Department of Agriculture, as branch chairman, and Louis G. Gentner of the South Oregon experiment station, was named chairman-elect. The 1956 meeting will be at Berkeley (Cal.).

FARM CONSERVATION

(Continued from page 1)

lish a confused pattern of development.

If followed the commission's recommendations would stimulate the shift from the present SCS programs from a national to a national-state grant-in-aid basis. Under this proposal federal grants-in-aid would be allocated under a formula giving weight to such factors as area, type of land, population and per capita farm income with state matching related to its fiscal capacity.

Backing its recommendation for wider participation of states in SCS on a grant-in-aid basis from the federal government, the commission pointed out that the present almost 100% financing by the federal government has attracted cooperation from only 25% of all farmers and ranchers. The state share of the contributions amounts to some $2 million annually whereas the federal share is $60 million.

A considerable share of the state total contribution of $2 million comes from the three states of Iowa, Louisiana and Oklahoma. Backing its emphasis on federal-state participation the commission asserts that the rates of progress in these three states in these desirable practices are evidence of the importance of state financial backing.

Regarding ACP payments which are now made directly to the farmer by the federal government, the commission reports that such payments would be more desirable through state and local machinery administration. The commission has recommended that USDA institute a shift to this latter administrative method as soon as states submit satisfactory plans.

The criticism reported to the commission consists of reports that current payments are devoted to so-called recurring practices, which would be used by any intelligent farmer. This method appears to have become a prop to farm incomes regardless of need by areas.

The commission sees the more appropriate use of federal funds in soil conservation technical assistance and to federal participation in watershed projects.

Great Plains Ammonia Field Day Scheduled

DES MOINES — The Great Plains Agricultural Ammonia Assn. Midwest Trade Show and Field Day is scheduled for July 20-21. The business session and show will be held July 20 at Hotel Fort Des Moines for members only.

The field day, which is being held in cooperation with Iowa State College, will be held at Ames July 21 and will be open to the public.

Michael J. McDonald

JOINS SALES FORCE—Michael J. McDonald has joined the sales force of the Albemarle multiwall bag division and will headquarter at Chicago, according to an announcement from the Albemarle Paper Mfg. Co., Richmond, Va. Mr. McDonald will represent the multiwall division in Illinois and Wisconsin, covering the territory formerly handled by Dirk D. Young. Mr. Young now handles the Iowa-Nebraska territory for Albermarle.

Six Pesticidal Mixes Developed by USDA For Rose Protection

WASHINGTON — Combinations of various insecticides for control of many insects, mites and diseases that attack roses, have been developed by USDA scientists, the Department has announced. Tests covering the past five years have turned up six combinations of insecticides, miticides and fungicides of almost equal effectiveness, for control of aphids, leafhoppers, spider mites and diseases such as blackspot and mildew.

According to the USDA, all six of the mixes contained 5% DDT and 1% lindane, plus one of the following fungicide-miticide combinations: (1) 3.4% copper, 25% sulfur, 1.5% Aramite; (2) 3.4% copper, 25% sulfur, 4% malathion; (3) 7.6% ferbam, 25% sulfur, 1.5% Aramite; (4) 7.6% ferbam, 1.0% Karathane, 1.5% Aramite; (5) 6% zineb, 1.5% Aramite; (6) 6% zineb, 1% Karathane, 1.5% Aramite.

In their tests, entomologists and plant pathologists of USDA's Agricultural Research Service found that some miticides and fungicides were incompatible. For this reason, the miticide malathion could be teamed only with the fungicide copper oxysulfate. The scientists also learned that some of the inert materials of the dust combinations were detrimental to the miticides.

USDA says that all experimental materials are not now available on the market.

India Gets $50,000 FOA Authorization

WASHINGTON — Foreign Operations Administration has announced a $50,000 authorization to India for commodities for determination of soil fertility and fertilizer use. Source is world wide, with ending delivery date next Jan. 31.

Included in the authorization are chemical preparations and filter paper, $1,100; glass and plastic bottles and glass vials, $1,200; soil augers, $100; electrical apparatus, $1,300; air compressors and pumps, $4,300; scientific and professional instruments, apparatus and supplies, $27,000, and trucks, $15,000.

Scientists Devise Formula for Measuring Soil Losses

URBANA, ILL. — Agricultural scientists have developed a formula that will help them predict accurately how much soil a farmer will lose on his farm every time it rains.

The design of the formula and its importance in erosion control were outlined here recently by C. A. Van Doren, soil conservationist with the U.S. Department of Agriculture's Agricultural Research Service. Mr. Van Doren addressed the 48th annual meeting of the American Society of Agricultural Engineers.

He pointed out that conservation research has demonstrated that soil losses from erosion depend upon a key group of factors. These include steepness of slope of the land, length of slope, effectiveness of conservation practices on the land, erodibility of the soil, previous erosion losses on the land, crop rotations, management and amount and intensity of rainfall.

From studies of available research data, soil loss values can be assigned to each of these factors. Land with a 5% slope, for example, will have a specific loss value higher than land with a 2% slope. Land in corn has a higher loss value than land in pasture.

For any parcel of land, soil conservationists can determine the soil loss values for each of these factors and, by multiplying the loss values, can determine the estimated soil loss per acre for any given rainfall.

At another session of the society Lloyd Harrold, soil conservationist with the U.S. Department of Agriculture, reported the results of studies in Ohio on the moisture consumption of different crops during different periods of the crop's growing season.

Mr. Harrold found that there are "peak rates" of water use for each crop, and these peak periods come at different times in the season. Data are also available on the average monthly moisture consumption of various crops under normal rainfall conditions.

Before the farmer can establish a bookkeeping system to keep track of available soil moisture, more information is needed on evaporation losses for each type of soil under varying temperature, wind and humidity conditions.

When the scientists develop this information, the farmer can calculate the amount of moisture added to the soil by rainfall and irrigation, determine the amount used by his different crops and the amount lost by evaporation and figure his soil moisture balance for any weekly period.

Anhydrous Production Sets Record in April

WASHINGTON — Production of synthetic anhydrous ammonia set a new monthly record during April of 285,760 short tons, according to the U.S. Department of Commerce. Production during March, the previous high, was 285,239 short tons, and output during April a year ago was 232,246.

April production of other inorganic chemicals, with April, 1954 output in parentheses, includes ammonium nitrate, fertilizer grade 148,259 short tons (125,457); synthetic ammonium sulfate (technical) 90,042 (78,233); phosphoric acid 312,059 (264,979).

NEW OIL DISCOVERY

EL DORADO, ARK.—Lion Oil Co. has an apparent oil field discovery in its Skarphol No. 1 well in Bottineau County, N.D. The well is located 12 miles northwest of the town of Bottineau and 7 miles east of the Northeast Landa Field, the nearest previous production in North Dakota. It was drilled in conjunction with the Tomahawk Oil and Gas Co.

INSECT NOTES

(Continued from page 5)

limited. We really had to look to find them. But they're there."

The weevil has been found in southern Idaho and in Lewis and Nez Perce counties of Idaho, which adjoin Washington. In Oregon, it has been found near Hood River and in Union County, south of Walla Walla.

Codling Moth Active, Indiana Report Says

VINCENNES, IND.—Codling moth larval activity is between first and second brood and has been generally light for the period. Increases in larval activity can be expected from July 5th on with an even greater increase occurring about the 12th or shortly thereafter. Enough new entries were found June 27 in orchards near Linton, Indiana, where heavy populations of codling moth were carried over from 1954 to warrant a between-brood cover spray where DDT deposits were 14 days old. First brood adults (those that make second brood larvae) have begun emerging in emergence cages at Vincennes. The first first-brood adult emerged June 19. Emergence then ceased until June 23 and then increased on June 26 and 27.

Mite populations in orchards in this area vary extensively from orchard to orchard, depending on what the grower has used previously to control mites and the thoroughness of application.

Red banded leaf roller examinations made near Linton, Indiana, on June 27 show that most of the first brood adults had emerged and that numerous second brood larvae had hatched. A thorough application of TDE now in orchards in Indiana, where this insect was abundant during first brood, is suggested.—D. W. Hamilton.

New England Becomes "Hurricane Territory"

BOSTON—New England has officially become "hurricane threatened territory," it was announced here recently as special 24-hour teletype service linking Boston, Providence, Bridgeport and New Haven, the hurricane battered communities in 1954, with Southern cities was set up.

"The increasing incidence of hurricanes in that area since 1938" was the reason given. Last year, hurricanes Carol, Edna and Hazel caused millions of dollars worth of crop loss in the New England states. In the battering of the East Coast, 200 persons were killed and about $800,000,000 damage to crops and property was caused.

Farm Experts Draft Guides To Ease Great Plains Drouths

DENVER, COLO. — A long-range program designed to control the effects of the weather hazards in the Great Plains states has been agreed upon by a group of U.S. Department of Agriculture experts and executive members of the Great Plains Council.

During the Great Plains Agricultural Conference here May 31-June 2, the group set down a detailed list of suggested guides to a successful long-range program for alleviating the drouth problems in the "dust bowl."

No legislation was proposed to implement the guide, which the group made clear was not a final action. The agricultural authorities said they believe that chief responsibility for putting a drouth-fighting plan into effect rests at "grass roots" level. In setting down responsibilities the report said:

"The primary responsibility for proper land use rests with the individual land owner and operator." It did point out, however, that county, state, federal and local governments have public obligations and that civic, farm and business interests in a community must give constructive and responsible local leadership.

To provide a basis for intelligent action on problems facing farmers and ranchers in the Great Plains region, the report recommended that much additional research be done in the following areas:

"Determination of the incidence and range of weather variations and consequent crop yields by major climatic and soil areas of the Great Plains. . . . Soil surveys and land classification. . . . Surface and ground water resources. . . . Analysis of investments cost and income potentials of different sizes and types of farms adapted to different areas of the Plains. . . . Determination of the most effective ways of surviving drouth. . . . The place of zoning, easements, restrictive covenants, grazing and soil conservation districts in guiding desirable use of land. . . .

"More efficient use and regulation of scarce water supplies. . . . Basic studies of the potentialities of artificial rainfall. . . . Analysis of the effects of governmental programs on the economy of the Plains. . . . Studies of farm and ranch marketing and production supply problems resulting from land use adjustments. . . .

"Research specific to the dry farming areas. . . . Range and grassland research. . . . Research on irrigation and other water problems. . . . Hydrologic research. . . . The role and adequacy of organizations, local, state and national, in meeting local problems."

On credit, the report recommends that private and cooperative leaders should continue to provide maximum sound credit assistance to the majority of farmers and ranchers. It calls for a review of the need for and the possibility of modifying regulations, and supervisory requirements for Federal Deposit Insurance Corp. and state banking laws to aid bankers in meeting the problems of carrying good risks through an emergency period.

It further recommends that all lenders, private and governmental, should be encouraged to take into consideration in their credit policies proper land use and sound management practices as well as the size and type of operation.

No mention was made of the general long-term loans at low interest rates which farmers and their organizations are demanding.

The group said federal crop insurance "should not be offered on land unsuited for long-time production of the insured crop."

The report recognizes the need for converting marginal and sub-marginal lands back into grass, but did not make any recommendation that the federal government buy up these lands to make the conversion. It does, however, call for contractual arrangements between land owners and government as a means of bringing about and maintaining major adjustments in line with recommended land use.

Intensive education of farmers and ranchers in uses of lands, planting of crops and conservation of water resources is strongly urged.

Great Potential

In conclusion, the report pointed out that "the farm products from this vast, productive, agricultural empire helped win two world wars. It can continue to be a great reservoir of productive strength if wisely managed to conserve and increase its productive capacity. These great potentials can be fully realized by putting into effect the practices and procedures that will more completely control the effects of the weather hazards."

Ten states were represented at the conference by top farm experts in their states, including: Colorado, Kansas, Montana, Nebraska, New Mexico, North and South Dakota, Oklahoma, Texas and Wyoming. During the conference, governors of eight states and representatives of the governors of the other two states met with Ezra Taft Benson, secretary of agriculture, and presented recommendations.

Copies of the adopted report have been sent to interested groups and individuals in the Great Plains states with an invitation to comment on the guides agreed upon.

SAFETY EXECUTIVES—Officers of the executive committee of Fertilizer Section, National Safety Council at recent meeting in Roanoke, Va. Left to right: E. A. Burroughs, Jr., F. S. Royster Guano Co., Norfolk, Va., secretary; Thomas J. Clarke, GLF Exchange, Ithaca, N.Y., chairman; J. C. Kato, National Safety Council representative, Chicago, Ill.; and Curtis Cox, Virginia-Carolina Chemical Corp., Richmond, Va. The executive committee met at the Roanoke Hotel in an all-day session on June 12. (Story on page 1, Croplife, June 20.)

National Shade Tree Conference Meeting Planned for Aug. 1-5

SANTA BARBARA, CAL. — The forthcoming 31st annual meeting of the National Shade Tree Conference will be the first to be held on the Pacific Coast. Officers and committeemen of the Western Chapter, NSTC, and of the national organization are working together in the arrangements for the conference, which will have headquarters at the Mar Monte Hotel, Santa Barbara, from Aug. 1-5, 1955.

Topics of discussion will include the problems of shade tree maintenance along the streetside, arboriculture as an industry, the training of young trees, and the equipment, standards and ethics of practicing arborists. Many of the nation's leading manufacturers of arborists' supplies will sponsor exhibits.

Croplife®

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Western states.

NPFI Offers "Single Voice"

A fine spirit of cooperation and apparent eagerness to "get on with the show" was seen at the first joint meeting of the American Plant Food Council and the National Fertilizer Assn. at the Greenbrier Hotel a short time ago. Although the National Plant Food Institute, a consolidation of the two, was not officially to become a reality until July 1, there was evidence aplenty that the organization was already a going concern.

The excellent program presented by the two groups is probably an indication of more good things to come under NPFI auspices and, as Edwin Pate, American Plant Food Council board chairman said in his talk, the fertilizer industry will now "speak with a single voice, but one with a familiar tone."

Many fertilizer industry people were heard to remark favorably about the consolidation, with the hope being expressed by some that the Institute should encourage the pooling of information on research going on in the industry in order that the entire trade may benefit therefrom. With a single organization, channels of information should be more easily used for the whole industry, they indicated.

One industry man, engaged in the technical side of fertilizer manufacturing, told a small informal group at a luncheon table that he doubts if there are any real "secrets" in fertilizer technology any more. He reported that several in the trade had confided to him that they each had a "secret" process, and that all of these methods, thought to be unknown to anyone else, were precisely alike!

His comment, one that might be in keeping with the new spirit of the National Plant Food Institute, was that information should be allowed to flow more freely throughout the industry. "I just can't see how this reluctance to talk is going to help anyone," he said. "If the truth were known, it is likely that the competitor from whom all information is withheld, may have a better process than yourself, and everyone is retarded because of this secrecy."

Actually, many years will no doubt be required to bring about broad changes in attitude, but it does seem that there will be no better time to begin thinking along these lines. The launching of NPFI could signal a real upswing in fertilizer know-how . . . and many in the industry hope that research and investigation will be accelerated and the results disseminated to all.

We are happy to see the NPFI getting off to such a running start. It looks good for the future of the fertilizer industry and should be a significant step ahead. In future years, this consolidation will certainly be regarded as the beginning of a new era in the fertilizer trade.

Studying for Achievement

Farm research and farm education, on their present basis, are not adequate to serve agriculture and the nation, according to J. Ritchie Smith of the National Cotton Council of America who spoke before a North Carolina audience recently. He charged that science and technology in agriculture had not kept pace with the over-all economic growth of the country.

"This growth has had an almost fantastic upsurge since the end of World War II. And right in the middle of the picture always leading the way has been scientific achievement. Basic discoveries in physics, in chemistry, in metallurgy, and the like—coupled with an almost endless array of commercial applications—have been the yeast for this truly staggering rate of economic development," he continued.

That the case histories of a great many of the industrial concerns listed on the stock exchanges a generation or so ago suggest that an aggressive research and development program has been closely associated with business survival, was pointed out. Other statistics indicate that the commercial concerns of America are currently reinvesting income in research to the tune of about one and a half billion dollars annually. This is roughly three times the amount American businessmen were willing to bet on science back before we got into World War II.

Agricultural research and education have made some significant strides in recent years, the speaker pointed out. New and better varieties, a sustained upward trend in crop yields, mechanization, improvements in livestock and feeding practices, all are evidence of this. But these are not enough, unless we look upon farm research and education as nothing more than a means of providing abundant food and fiber for America's inhabitants.

"In looking back to the beginning of public farm research and education, we find little justification for the narrow concept of insurance against scarcity. Rather we find the idea for a system of helping farmers help themselves—by providing a regular, continuing arrangement for discovering new agricultural knowledge and carrying it over into practice."

The chief product, he added, would be a better and more rewarding life for farm people, who are still behind the rest of the nation in per capita income and who, at present, find themselves in a tight squeeze between high costs, declining prices, and acreage restrictions.

As stated many times before, we are in favor of more research. It is the dream that stuff is made of. Its people observe things that others of less training pass over without seeing, and in so-doing, bring about progress.

Certainly the agricultural chemical industry knows the value of research. That's why the field holds a continuing promise for the future.

Quote

"Some fifty years ago the dean of one of the largest midwest agricultural colleges wrote an article for a leading farm magazine in which he stated that because of the high natural fertility of the soil in his state, the ease with which red clover and other legumes could be grown, and the large number of cattle fattened on the farms, it would never be necessary for a pound of commercial fertilizer to be used in that state.

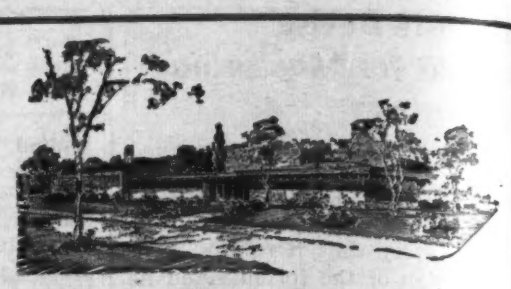
"Last year I was visiting a prominent farmer located within 100 miles of that college and was interested in his statement that in a test which he had run on his farm in 1953, where one half of a large field was covered with commercial fertilizer and the other half untreated, a return of $12 had been realized for every dollar spent for the fertilizer.

"The above is not offered to belittle the judgment of the dean. He was a great man and he has gone to his eternal reward. When he spoke he used the knowledge available in that era. Since then agriculture has undergone a vast revolution. In fact, there has been more change in that 50-year period than in the 2,000 years preceding. Actually, most of the vast changes have occurred in the 10 years which have elapsed since 1945." —H. J. Gramlich, Chicago, in talk before California Fertilizer Assn.

Quote

Cash costs of farming, often identified with modern technology, have gone up about one fourth in the past seven years. USDA economists say that to increase out-of-pocket expenditures . . . will often reduce real cost per unit of production.

Prices of major production items have risen considerably . . . but fertilizer has gone up about 30% whereas machinery, fencing, etc., have risen 80%. Labor has increased four-fold.—"Agricultural Research," USDA.



CROPLIFE is a controlled circulation journal mailed to those responsible for the production and distribution of fertilizer and other farm chemicals and to retail dealers of the agricultural chemical industry in the U.S. To those not on the controlled list, CROPLIFE is available at $5 for one year, $9 for two years ($8 a year outside the U.S. and possessions). Single copy price, 25¢.

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FEEDSTUFFS
MILLING PRODUCTION

se More Fertilizer, ess Labor, Kansas ield Day Guests Told

MOUND VALLEY, KANSAS—It's ommon sense to use more fertilizer nd less labor to boost crop produc- on in Southeast Kansas, according o Floyd E. Davidson, superintendent f the Kansas State College Mound alley Branch Experiment Station.

Mr. Davidson told about 200 farm- s attending the annual spring field ay at the station that while the cost f fertilizer has increased only about 0% since 1942 the other big cost ems in farming have gone up in rice by 150 to 160%.

"For every dollar spent on fer- tilizer for small grains and alfalfa you can expect an average of three dollars or more in return," he said.

A tour of the experimental fields emonstrated Mr. Davidson's points. his year corn as well as other crops howed a tremendous boost from the se of fertilizer.

A wet spring has aided in the re- ults from nitrogen on corn, and Mr. avidson said that the corn shows nore response to fertilizer than he as ever seen in the area.

utch Elm Disease

CHICAGO—Dutch elm disease has pread into Chicago and 11 suburbs. he Illinois Natural History Survey as diagnosed 29 trees in the area s infected.

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Chemical Prevents Mint Rust, Tests In Oregon Indicate

Mint rust, a fungus disease that has been cutting into the yields of Northwest growers by as much as 35%, can be prevented with Phygon Mint Dust, tests in Oregon indicate.

Specially compounded for this use, the chemical is a product of the Naugatuck Chemical division, United States Rubber Co. It is applied to the mint four to six times during the growing season and virtually eliminates rust without leaving a residue in the mint oil, according to the firm.

In field tests in Oregon, where one fourth of the peppermint variety of mint is produced, Phygon Mint Dust was applied to fall-plowed mint at the rate of 30 to 40 lb. per acre between May 20 and 25, when the yellow spore mass appeared. The crops were dusted as soon after irrigation as possible. The application was then repeated 2 to 4 times at 10-day to two-week intervals. On spring-plowed mint the same dosages were used, except that the first application was made between June 1 and June 15.

Two applications of 30 to 40 lb. of the dust per acre are recommended for the fall starting after the mint has been cut and has regrown to 2 or 3 inches. The second application is made about 2 weeks later.

ILLINOIS FIELD DAY

URBANA, ILL. — The newest oat and alfalfa varieties will be spotlighted at the Northern Illinois Experiment Field meeting in DeKalb County July 6. Northern Illinois farmers will also see the latest experiments in chemical weed control, wheat, barley and rye varieties and diseases, oats for silage, red clover varieties, forage management, wide-row corn and use of fertilizer for corn, oats and alfalfa.

Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15c per word; minimum charge $2.25. Situations wanted, 10c a word; $1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20c per insertion additional charged for forwarding replies. Classified advertising rate not available for commercial advertising. Advertisements of new machinery, products and services accepted for insertion at minimum rate of $9 per column inch.

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- Keeping all segments informed of all industry news.
- Providing feature material designed to help manufacturers and mixers to do a better job, to help dealers sell and to help farm advisors and educational people make sound recommendations.
- Keeping all industry alert to current and proposed government action.
- Providing a channel through which news and advertising can reach all segments of the industry.

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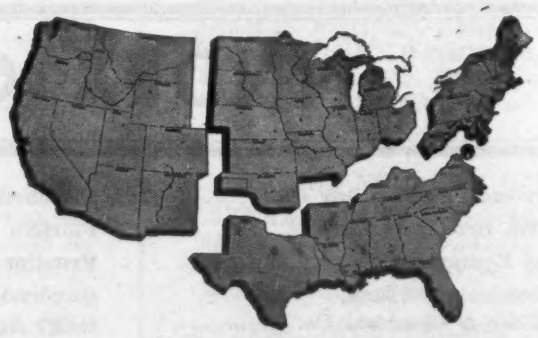

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